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ABSTRACT

This curriculum guide was developed to help business education teachers in Kansas improve and update their curricula to meet the needs of the present and future electronic office. The guide is based upon the premise that computer and keyboarding skills will be needed by all students and that communication skills and knowledge of word processors/computers will be a skill needed by all business graduates. The first of eight sections introduces the guide, summarizes the philosophy behind its development, and outlines career opportunities for business graduates. In the second and third sections, a curriculum for secondary and postsecondary schools is recommended, and course descriptions are provided. Hardware and software for business education are discussed in the fourth section, with some price information and recommendations given. The fifth section of the guide suggests ideas for implementing the curriculum and teaching techniques, while the next two sections, in brief notes, cover testing and evaluation and adult evening training. The final section of the guide is a bibliography that lists instructional materials, including textbooks for word processing, communications, machine dictation, human relations, keyboarding, and computer literacy; reference materials; keyboarding and computer literacy software packages; newsletters; publications on office automation; educational computing journals; and business education software. Appendixes to the guide contain information on setting up courses on keyboarding and computer literacy and a displaywriter check list. (KC)

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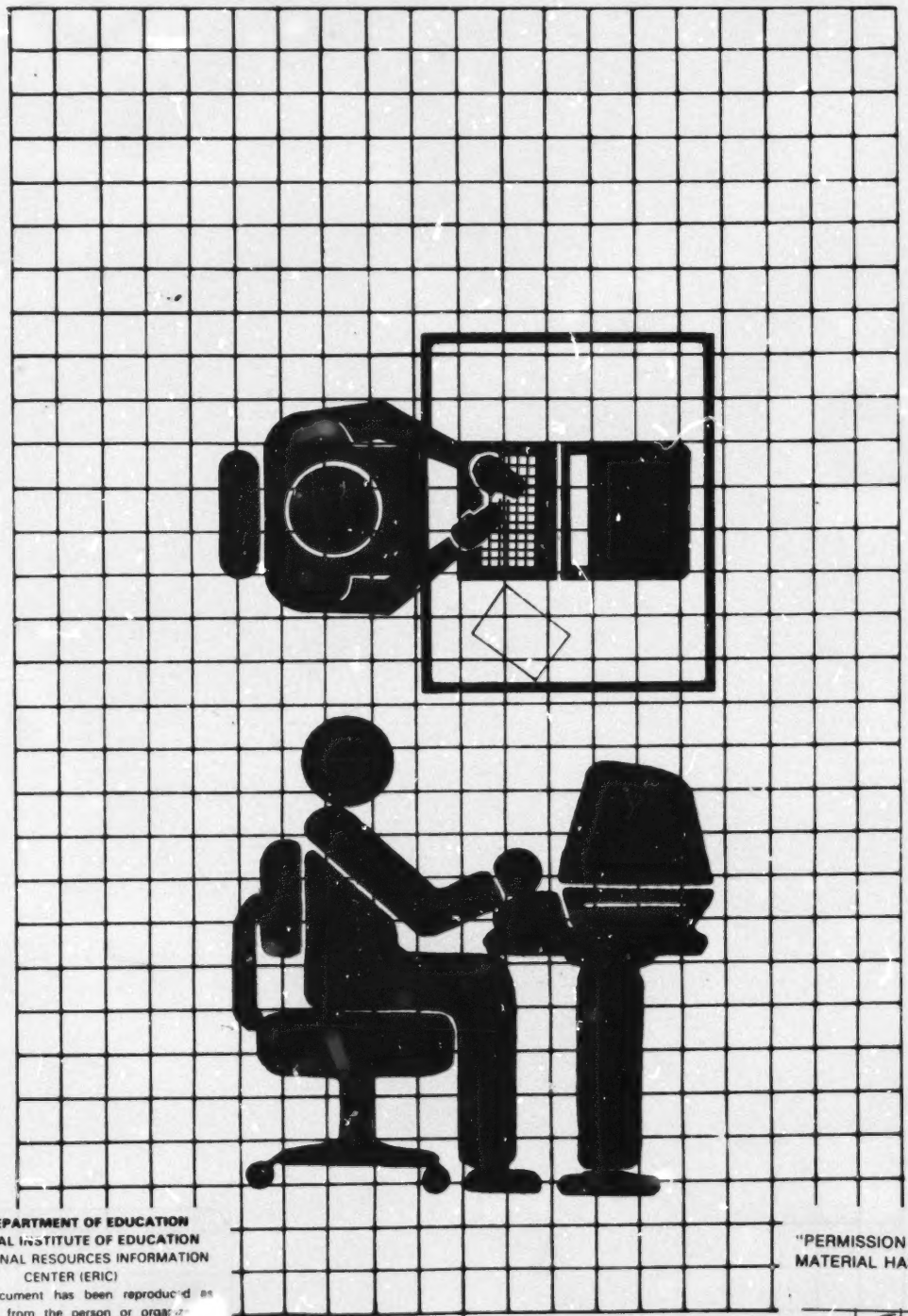

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Kansas was fortunate to have Patty Housh, Word Processing and Secretarial Instructor at Northeast Kansas Area Vocational School, Atchison, Kansas, complete a survey of postsecondary instructors from 32 states (105 responses). Some of that research is incorporated into this guide. Whenever Housh (1984) is quoted, we are referring to Ms. Housh's unpublished research.

Special thanks to Juanita Parker, business teacher at Ness City High School, Ness City, Kansas, for compiling the keyboarding information in Appendix A.

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INTRODUCTION

In the next several years, the country will witness a rapid acceleration of the information economy and the continued decline of its industrial base (Naisbitt, 1984). As we become more involved in the process of gathering, processing, and disseminating information, a tremendous number of new jobs will be created in information-intensive enterprises. The United States Department of Labor has projected that by 1990, there will be an additional 700,000 job opportunities for workers with secretarial skills and an additional 350,000 opportunities for workers with general office skills (Naisbitt, 1984). The responsibility of preparing these workers rests with our educational system, and particularly with business educators.

Education has always been a priority in America, but our schools are now being examined more closely than ever before. In 1983, "A Nation at Risk" told the country there was a "rising tide of mediocrity," which turned the national focus to improving the quality of education. Numerous books, articles, and reports released since 1983 focus on what kind of educational programs will best prepare our students for the information age. A common thread running through most of those reports is the idea that educators must be prepared to work with the business community to determine what the new educational programs will be. Many of the business education programs will be involved with the instruction of information processing. At present, information processing includes the fields of accounting, computer technology, word processing, administrative support services, and communications. These areas are constantly evolving and changing along with the definition of information processing.

Current predictions about our changing society, schools, and workforce were kept foremost in mind as this guide was developed. We offer this guide to help direct Kansas business education programs. The actual work, however, in developing quality programs rests with the local business educator.

Career Opportunities

This curriculum guide is based upon the premise that computer and keyboarding skills will be needed by *all students*. Communication skills and knowledge of word processors/computers will be a skill needed by *all business graduates*. If we accept the fact that 65-75 percent of our workforce are involved in information-based occupations (McCune, 1984); and if we accept the predictions that a high percentage of these jobs will utilize microchip technology for input, then business educators must realize that every student in our school system needs to know how to keyboard and needs to have a working knowledge of the computer. This does not imply a keyboarding skill of 60 wpm, the ability to expertly keyboard manuscripts and letters, or programming proficiency.

The belief that business graduates need knowledge of word processing/computers can be supported by a survey sponsored by the Professional Secretaries International Research and Education Foundation, which surveyed newspapers in 19 U.S. cities and 3 Canadian cities. Excluding the word processing jobs, the overall incidence of word processors/computers in other ads was 22.9 percent. This exceeds the incidence of "shorthand" and "secretarial skills," which in previous surveys were the most frequently used terms.

Use of Word Processors/Computers Indicated
(Percentage of Ads)

	1982	1983	1984
Administrative Assistant	4%	11.4%	18.4%
Administrative Secretary	5	15.7	24.3
Executive Secretary	6	12.3	19.4
Secretary	7	18.1	25.2
Secretary/Receptionist	4	12.1	13.6
Word Processing	100	100.1	100.0

A survey in 1982 by Kelly Services of Fortune 1300 companies indicated that 98 percent own some type of data or word processing equipment.

Aside from the knowledge of computers and word processors, *the entire base of the business education curriculum must be communications*. A 1982 survey by the University of Kansas indicated that Kansas employers wanted our graduates to improve communication skills, including spelling, punctuation, grammar, proofreading, listening, and writing. The Carnegie Report (1983) emphasizes these same skills, as do studies throughout the United States. Kelly Services surveyed non-managerial employees on their insights into the automation process. The results, published in *The Kelly Report on People in the Electronic Office II* (1983), indicate that 59 percent of support personnel believe that traditional language skills, such as English usage and grammar, have become more relevant to their new job with electronic equipment. Studies completed by Delta Pi Epsilon (1981) indicate that 55 percent of word processing specialists perceive their operators to have inadequate grammar skills. Seventy percent of the word processing operators themselves felt they had inadequate grammar skills.

Research completed by business teachers and the Administrative Management Society (1983) indicates that schools spend 14.7 hours of study a year on communication. At the same time, offices are averaging 5.3 hours each week on communication activities. Additional research showed that every office (100 percent) was devoting time to the task of "oral instructions," while only 88 percent of the schools were incorporating this task into their instruction. Another comparison in the communications area was "written instructions for procedures manuals." Thirty-nine percent of the offices, as compared to 17 percent of the schools, were devoting time to this task. Business educators must continue to emphasize this basic communication skill in every business class.

What should also be of concern to business teachers is where the training of the personnel in word processing took place (Kelly, 1982).

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Who Trained Your Personnel?

	Percentage
In-house	51
Manufacturer	32
Outside Consultant	4
Self-training	3
Manufacturer and in-house	3
Other	7

What is interesting about these statistics is that sending employees to classes outside the office did not receive any substantial following. According to a 1982 report presented by Terrell H. Bell, Secretary of Education, industry spent approximately $30 billion for training and education in one year. That amount is almost equal to the entire amount expended by public postsecondary schools nationwide (Workplace Education). The obvious conclusion is that inadequate and/or duplication of training is occurring. Business educators can and should be meeting business and training needs.

A survey conducted by Professional Secretaries International Research and Educational Foundation indicated that only 3.8 percent of the want-ads requested education beyond high school. However, nearly 30 percent of the ads requested experience, with word processing being requested 39.7 percent of the time.

The following statistics about typing speed from this same survey by Professional Secretaries International Research and Education Foundation were also compiled:

Typing (Only Ads Giving Speed Requirements)

	% of Ads Requesting 60 WPM or More	% of Ads Requesting 70 WPM or More	% of Ads Requesting 80 WPM or More
Executive Secretary	100%	53%	14%
Administrative Secretary	87	35	13
Word Processing	86	35	8
Secretary	72	24	8
Administrative Assistant	64	20	12
Secretary/Receptionist	46	12	3

Based upon these statistics, it is obvious that schools should increase their typing speed standards.

Job titles are changing, and these titles need to be kept in mind when designing curriculum. The following are a sampling of computer career titles:

Data-Entry Clerk
Computer Operator
Peripheral Equipment Operator
EDP Managers
Database Managers
Data Communications Specialists
Programmers
Applications Programmers
Systems Analysts
Technical Writers
Computer Security Specialists
Training Specialists
Computer Consultant

Titles for office workers have also changed to the following:

Present	*New*
Secretaries	Administrative Assistants
Stenographers	Communication Specialists
File Clerks	Information Specialists

New titles appearing for word processing workers are as follows:

Word Processing Operator
Word Processing Specialist
Customer Support Representative
Training Specialist
Information Processing Specialist
Systems Engineer

Certain skill areas which have been an integral part of business education for years are now *less important*. Some of these skills include:

1. Learning a variety of letter styles. The style used by the employer can easily be learned on the job.
2. Typing from textbooks with explicit directions and material spelled and punctuated correctly. The exception to this may be in situations where students have English as their second language.
3. Complex tabulation problems.
4. Spirit, stencil, and offset duplication.
5. Addressing envelopes and typing on cards.
6. A variety of manuscript styles.

Secondary Business Education

In November, 1983, the Kansas State Board of Education increased graduation requirements from 17 to 20 units.

	UNITS	
Subject	*Past*	*Present*
Science	1	2
Mathematics	1	2
Social Studies	2	3
English	4	4
PE	1	1
Electives	8	8
TOTAL	17	20

The requirements in mathematics, science, and social studies were increased, but so were the total numbers of units required for graduation; consequently, the number of electives available remain the same. Kansas school districts, however, have the option of increasing graduation requirements beyond the state minimum, with the consequence of decreasing the number of electives available to students.

Business educators must be cognizant of the decreasing electives available to high school students, in addition to the decreasing numbers of students. The *business teachers must define a role* amidst all these changes. We encourage business teachers to diversify and extend their course offerings beyond the traditional business education subjects.

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students, and grade levels. Business teachers must develop partnerships with other disciplines in the entire school district K-12. For example, the business teacher should be working with the elementary techers in designing and implementing keyboarding or working with the math teachers in developing computer courses. There should be district-wide coordination of all computer activities and curriculum should be articulated K-12.

We are recommending a *core curriculum for all students*, taught by the business teachers. The core curriculum would include *Keyboarding* and *Computer Literacy*. These core courses are recommended, no matter what the size of the high school. These courses comprise the new backbone of Business Education: knowledge of the computer and knowledge of the keyboard. This core curriculum may only be workable for the next several years, however. As more and more elementary schools and middle schools are teaching computer literacy, it may not be a class taught in high school in the future. In addition, voice input technology is developing rapidly. This and other technological developments will decrease the need for and the cost effectiveness of keyboarding.

We are also recommending a *core curriculum for all business students*, which would consist of not only *Keyboarding* and *Computer Literacy*, but also *Business Concepts*. This background would help Kansas high school business graduates have an understanding of computers and business. It should be noted that some school districts in Kansas require a semester of General Business or Economics (taught in the Business Department) for all students.

Ideally, Business Communications should be a part of the core curriculum for all business students. Because of the decreasing enrollments in Kansas high schools and the increase in graduation requirements, a Business Communications course for one semester or a year would, in many cases, not have sufficient enrollment to be offered. If Business Communications cannot be offered as a separate course, the business teacher should work closely with language arts teachers so that business communications is included in the language arts curriculum. In addition, if a separate course in communications is not offered, there should be continual emphasis on these skills in every business course.

Postsecondary Education

While there has been national attention on computer literacy for all students, there has been greater demand for literacy. Basic literacy is not the sole responsibility of elementary and secondary schools; postsecondary institutions need to address this problem area also. Private businesses spend a great amount of money training their employees to read, write and compute; and literacy should continue to be a goal of postsecondary education.

The recognition that we are really living in a global economy means that postsecondary schools are not just preparing workers for a local community. While economics courses will continue to be needed, broad cultural values and knowledge are definite assets. The humanities are going to be significant in preparing students for the many technological changes ahead, and especially for the information, communications, and service fields.

Postsecondary institutions need to critically evaluate their career-oriented curriculums to be certain that students enrolled in those curriculums obtain the same quality and quantity of instruction in basic mathematics, algebra, English and speech as do students enrolled in a transfer curriculum.

Postsecondary institutions should review their business skill courses to be sure their students are receiving high-quality, demanding instruction. The courses should be worthy of having two or three credit hours attached to them. Courses that need to be evaluated critically include accounting courses designed for lower-ability students, an overabundance of courses that include typing, an abundance of human relations courses, high credit hours per semester for cooperative education, high total credit hours that can be earned for cooperative education, and a high percentage of total credit hours of business courses.

Increasingly, postsecondary institutions will have business-education partnerships. Some businesses will be providing funds, facilities, and company time to workers who wish to participate in training programs. If postsecondary institutions limit training programs to one semester courses at the school during the morning, they are not providing the type of training needed by businesses. Postsecondary institutions should offer more short courses for 3 hours, 1 day, 3 days, or perhaps 3 weeks, at a variety of sites and at a variety of times. Specific seminar topics often requested by businesses include business writing, business finance, secretarial updates, personal computers, word processing, spreadsheets, data base, telecommunications, graphics, and human relations. Entrepreneurship, management, budgeting, accounting, and problem-solving seminars are becoming increasingly popular.

As community colleges exercise their mission to provide community education, they need to be alert to certain community needs that they cannot and should not provide. Especially in urban areas, a community need may exist for advanced management, accounting, and finance courses -- courses offered at the junior or senior level in college or in a graduate program. These are courses that should be taught at an institute of higher education and by faculty with advanced degrees in those areas.

Life-long learning will be a major trend. "In education we are moving from the short-term considerations of completing our training at the end of high school or college to life-long education and retraining" (Megatrends, p. 98).

As more corporations consider their employees as lifetime employees, they will see the need to retrain those employees several times. John Naisbitt suggests this phenomenon "may signal the need to return to the ideal of a generalist education. With too much specialization, a specialty may become obsolete in the long run" (Megatrends, p. 100). Postsecondary institutions should emphasize education as a way of learning how to go on learning for a lifetime.

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ADVISORY COMMITTEES

Before any work is done in curriculum revision, a very important group of people should be consulted: the business people who are hiring our students. As educators, we must work cooperatively with the business community. Kansas has an increasingly older population, which means more people with fewer contacts with our schools (McCune, 1983). If we expect our communities to support education, we must work with the community. It is vital that business educators organize an advisory committee which includes leaders from business from the surrounding community, the professions, education, the general public, and students enrolled in business education programs.

The State Advisory Council for Vocational Education has the following materials available:

- HANDBOOK FOR LOCAL ADVISORY COMMITTEES

  Comprehensive overview of suggested methodologies for development and management of effective advisory councils and committees.

- VOCATIONAL EDUCATION BROCHURES

  For use in delivering information and strengthening the image of vocational education with prospective students as well as teachers, counselors, parents, and related publics.

- A GUIDE TO LOCAL ADVISORY COMMITTEE INVOLVEMENT IN PROGRAM IMPROVEMENT

  Provides a format for a four-meeting sequence to target specific areas of instruction, facilities and equipment, employment needs, and student evaluation.

- "SEE YOUR COUNSELOR" VOCATIONAL EDUCATION POSTERS

  An attractive public relations tool to increase the visibility of opportunities in vocational education.

- ANNUAL REPORT ON VOCATIONAL EDUCATION TO THE STATE BOARD OF EDUCATION

  Reviews evaluation findings and policy recommendations to the State Board of Education.

- AUDIO VISUAL PRESENTATION ON EFFECTIVE USE OF LOCAL ADVISORY COMMITTEES

  This presentation explains the purpose, role, and responsibilities of local advisory councils. It is useful in organizing local councils or orienting new council members. This is 12 minutes in duration and is available in slide/tape as well as 1/2 and 3/4 inch videotape formats.

- TELEVISION AND RADIO PUBLIC SERVICE ANNOUNCEMENTS FOR VOCATIONAL EDUCATION

  This is a set of seven 30-second TV spots or seven radio announcements of various lengths.

- "AMERICA WORKS WHEN AMERICA WORKS"

  A futuristic and provocative NBC television presentation regarding the changing nature of employment in our society. This is a 16mm film, approximately 80 minutes in length and available for short-term loan at no cost.

For further information about advisory councils, contact the Executive Director, State Advisory Council for Vocational Education, 120 East 10th, Topeka, Kansas 66612, 913-296-2451.

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SECONDARY BUSINESS EDUCATION CURRICULUM

SECONDARY

CORE COURSES FOR ALL STUDENTS

Suggested New Courses	*Traditional Titles*
Keyboarding (1 semester) grade levels 5-12	Typewriting I
Computer Literacy (1 semester) grade levels 5-12	

CORE COURSES FOR BUSINESS STUDENTS

Suggested New Courses	*Traditional Titles*
Keyboarding	Typewriting I
Computer Literacy	
Business Communications	Business English
Business Concepts	General Business

SPECIALIZED BUSINESS COURSES

Suggested New Courses	**Traditional Titles**
* Keyboarding Business Applications (or Word Processing I)	Typewriting I
* Word Processing Applications (or Word Processing II)	Typewriting II
Office Support Procedures	Office Procedures
Accounting I	Bookkeeping
Accounting II	
Computerized Accounting	
Business Law	
Introduction to Computers	
** Data Processing I	
** Data Processing II	
Entrepreneurship	
Economics	
Cooperative Business Education	

* Some schools may wish to number courses sequentially (such as Word Processing I, II, III) for two reasons: 1) When the counselors are helping students develop their schedules, it is easier for everyone to determine any prerequisites and the sequence; 2) Many of our school systems are now computerized and the number of spaces allotted for course names are limited. Consequently, if Word Processing I is shortened to WPI, most individuals will recognize the course name. If the course is titled "Word Processing," students should be using word processors - not typewriters.

** There was discussion about changing the name of the data processing courses to Computer Applications. It was decided to leave the name as it was because the title is easily recognized as a business course. Since other disciplines are teaching computer classes, it was felt this distinction was necessary. If the Business Department is the only discipline teaching computers, it is recommended that the course title Computer Applications be used.

For schools that offer one year courses instead of semester courses, the content described in the course descriptions can easily be merged. For districts which offer one semester courses, the content for the one year courses can be separated. The key to a good, up-to-date curriculum is a constant assessment of course content. Curriculum revision will need to be done each year because of the continual changes occurring in business.

Listed below are suggested curriculums for the various sizes of business programs in Kansas.

ONE TEACHER

Grades	
5-8	Keyboarding) 9 weeks Computer Literacy) 9 weeks/1 semester
9	Keyboarding/Keyboarding Business Applications
10	Business Concepts (1 semester) Business Communications (1 semester) or Introduction to Computers (1 semester)
11	Accounting I
* 11 or 12	Word Processing/Computer Application (1 year) Office Support Procedures (1 year)

* Alternate Years

Until all students receive keyboarding instruction in grades 5-8, Keyboarding will need to be offered to 9th grade students also. After a few years, it is expected that Keyboarding will be offered only in grades 5-8 and Keyboarding Business Applications will become a full-year 9th grade course.

TWO TEACHERS

Grades	
5-8	Keyboarding (9 weeks)
5-8	Computer Literacy (9 weeks/1 semester)
9	Keyboarding (1 semester)
9	Keyboarding Business Applications (1 semester)
10	Business Concepts (1 semester)
10	Business Communications (1 semester)
10	Introduction to Computers (1 semester)
11	Accounting I (1 year)
11	Word Processing Applications (1 year)
11	Data Processing I & II (1 year)
12	Office Support Procedures (1 year)
12	Accounting II (1 year)
12	Computerized Accounting (1 semester)

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THREE TEACHERS

Grades	
5-8	Keyboarding (9 weeks)
5-8	Computer Literacy (9 weeks/1 semester)
9	Keyboarding (1 semester) 3 sections
9	Keyboarding Business Applications (1 semester)
9	Business Concepts (1 semester)
9	Introduction to Computers (1 semester)
10	Business Math (1 semester)
10	Business Communications (1 semester)
10	Word Processing Applications (1 year)
11	Accounting I (1 year) 2 sections Office Support Procedures (1 year) Data Processing I & II (1 year) 2 sections
12	Accounting II (1 year) Computerized Accounting (1 semester) Entrepreneurship (1 semester) Economics (1 semester) Cooperative Business Education (1 year)

FOUR OR MORE TEACHERS

Grades	
5-8	Keyboarding) 9 weeks Computer Literacy) 9 weeks/1 semester
9	Keyboarding (1 semester) Keyboarding Business Applications (1 semester) Business Concepts (1 semester)
10	Business Communications (1 semester) Word Processing Applications (1 year) Business Math (1 semester) Introduction to Computers (1 semester)
11	Accounting I (1 year) Office Support Procedures I (1 year) Data Processing I & II (1 year) Business Law (1 semester)
12	Accounting II (1 year) Computerized Accounting (1 semester) Cooperative Business Education (1 year) Economics (1 semester) Entrepreneurship (1 semester)

SECONDARY COURSE DESCRIPTIONS

Accounting I: 1 year. Emphasis on accounting fundamentals including journals, posting, ledgers, financial statements, and adjusting and closing entries using manual and computer systems. Microcomputer software is utilized.

Accounting II: 1 year. Continuation of Accounting I, with emphasis on accrued income and expenses; single proprietorship corporation, and partnership accounting; interest and taxes, cost accounting; and analysis of financial statements. Microcomputer software is utilized.

Business Communications: 1 semester. Designed for all business students. Emphasis on grammar, spelling, punctuation, proofreading, letter composition, interpreting oral instructions, presenting oral and written business reports.

Business Concepts: 1 semester or 1 year. Designed for all business students. Emphasis on understanding business structure and organization management styles, productivity, teamwork, human relations, national and global economics, entrepreneurship, marketing strategies, business careers, and money management.

Business Law: 1 semester. Emphasis on understanding the structure of laws, the legal rights and responsibilities of citizens, the rights and obligations in personal business situations, and the judicial system.

Business Math: 1 semester or 1 year. Development of 10-key pad skill on microcomputers and calculators to solve business problems.

Computerized Accounting: 1 semester, taken after Accounting I or concurrent with Accounting II. Emphasis on utilizing computer software to solve accounting problems.

Computer Literacy: 1 semester. Designed for all students. Emphasis on computer terminology, computer usage in society, and capabilities and limitations of computers. Recommend software packages for problem solving. See Appendix B for more computer literacy information.

Cooperative Business Education: 1 year. Students work in a business-related position in the community for at least 15 hours per week. A related course for at least one hour a day provides the student with instruction which enhances the on-the-job experience.

Data Processing I: 1 semester. Emphasis on business applications using the computer. Should include software programs for spreadsheets and accounting. Instruction on BASIC programming is included.

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Data Processing II: 1 semester. Continuation of Data Processing I. Should include indepth software programs for data base and graphics.

Economics: 1 semester or 1 year. Emphasis on economic concepts; the rights and responsibilities of citizens; production of goods and services; money, credit and banking; personal economic benefits; understanding of the global economy.

Entrepreneurship: 1 year. Emphasis on small business management including the nature of small business, business ownership, marketing, operations and finance.

Introduction to Computers: 1 semester. A review of computer technology and terminology. Hands-on computer applications, including home computer use, simple word processing, and simple BASIC programming skill.

Keyboarding: 9 weeks. Designed for all students. Emphasis on learning the alphanumeric keyboard. More emphasis on accuracy than speed. Could be taught using electric typewriters and/or microcomputers. Keyboarding software is commercially available. See Appendix A for further explanation.

Keyboarding Business Applications: 1 semester following Keyboarding. Development of speed and accuracy in typing business letters (various simplified styles and full block style); tables; simple reports with endnotes, footnotes, and tables; and composition at the keyboard. Emphasis on grammar, spelling, punctuation, and proofreading.

Office Support Procedures: 1 year. Emphasis on office career paths; human relations; teamwork; productivity; understanding work flow; communications skills including telephone; electronic mail; mailing options; personal development; records management; reprographics; electronic filing; composition skills; office technology capabilities. Emphasis on language arts skills.

Word Processing Applications: 1 semester or 1 year following Keyboarding Business Applications. Emphasis on production of business documents using automated equipment. Input media may be dictation tapes, handwritten copy, or typewritten copy. Emphasis on grammar, spelling, punctuation, and proofreading.

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POSTSECONDARY BUSINESS EDUCATION CURRICULUM

POSTSECONDARY ADMINISTRATIVE SUPPORT SERVICES CURRICULUM

Philosophy

We believe that ...

- a *two-year degree* program should prepare students for *higher level* or *different office careers* than a one-year certificate program.
- a *two year associate degree* program should include *advanced administrative* and *skill courses* not included in a one-year program.
- *word processing* knowledge and skills are needed in all office education/ secretarial/*administrative service curriculums*
- a *separate word processing curriculum* is *not needed* since word processing equipment is no longer isolated in word processing centers but is distributed throughout offices.
- *word processing concepts & skills* should be *integrated* throughout the administrative support services curriculum.
- *keyboarding* is a *service course* for all students and especially needed by computer science, data processing, accounting, finance and English majors.
- special *short courses* (3-8 weeks long) need to be offered regularly to adults in Word Processing Operations, Keyboarding, Typing Letters and Reports, and Microcomputer Applications.
- *shorthand offerings* should reflect the amount, type, and speed of actual shorthand usage by secretaries, i.e. 80 wpm, to take telephone and other short messages for less than 1 hour a week.
- *calculating machines* courses should be *combined with business math* to eliminate course content duplication.
- speed development on the *10-key pad* can be included in the keyboarding course and/or the business math course.
- *business math* is designed to teach students to solve business problems. If remedial work is needed in addition, subtraction, multiplication, division, etc., it can be provided (for no credit) by the math or special resources teacher.
- *records management* is a *management* course, not a filing course. Records management should emphasize micrographics and records management cycle.
- administrative support services is a procedures course emphasizing cognitive skills (knowing) rather than psychomotor skills (doing, as in typing).
- office systems and systems management careers can only be obtained with a 4-year degree or past business experience and are not within the purview of two-year institutions.
- *curriculums* need to be *reviewed for duplication* of content and proliferation of skill development. As new technologies have impacted curriculums, new courses have been added. Those "add-on" curriculums may now have too many courses involving keyboarding/typing.
- *word processing skills* and the *equipment* itself will be *integrated* into *typing* courses within the next 5 years.
- Typing Business Applications will probably be renamed *Business Applications for Word Processing* in 2-5 years to reflect the increased use of word processors in the typing classroom.
- *business classrooms* with word processors, microcomputers, and/or computer terminals should be *in use 12-14 hours per day* and weekends.
- *no more electric* or electronic typewriters or *calculating machines* should be *purchased.* Multi-function word processors or microcomputers should be purchased instead. *Word processors* that have *10-key pads* and *handle math* easily should be purchased for the typing (administrative services) classroom. Math functions at present are used more by administrative support personnel than by managers.
- *one well-equipped classroom* should serve the needs of the administrative support services students. Postsecondary schools cannot afford to equip 2-3 classrooms (typing, calculating machines, and office procedures) with office equipment unless those rooms are being used mornings, afternoons, and evenings.

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- more *special seminars* or outreach programs (no credit) should be offered for community business people.
- *word processing management* should only be offered in the second year of a program after students have at least 80 or more hours of hands-on experience on 1 or more types of dedicated word processors.
- Business English and Business Communications are the *foundation* for the administrative services curriculum.
- the *liberal arts* are an *essential* part of two-year postsecondary curriculums in order for students to better understand and appreciate the world around them.
- *up-to-date textbooks* are absolutely necessary since office technology is changing so rapidly.
- current business journals (such as *Words, Information & Word Processing Report, Infosystems, Office Administration & Automation, & Modern Office Procedures)* should be required supplements to other curriculum materials.
- *microcomputer applications* should be *integrated* into *appropriate courses* such as accounts payable and receivable in accounting, spreadsheets in managerial accounting and sales management, and project management (PERT charts) in management courses.
- separate *microcomputer applications courses* should be offered only to *adults not enrolled in the regular business curriculum since the business students will be receiving microcomputer applications throughout their curriculum.*

There are not separate curriculums listed for office education or secretarial areas because information/word processing knowledge and skills are needed in all those areas. Information/word processing concepts and skills should be integrated throughout the Administrative Support curriculum. In many postsecondary institutions, it is not feasible to offer a separate word processing curriculum, nor would it be necessary to do so with curriculum consolidation and revision.

ADMINISTRATIVE SUPPORT SERVICES

1 year certificate

Courses	*Credit Hours*	*Required*	*Elective*
Office Automation Concepts	3	X	
* Keyboarding Business Applications	3		
Business English	3	X	
Business Mathematics	3	X	
Accounting I	3	X	
	15		
Word Processing Applications I	2/3	X	
Business Communications	3	X	
Speedwriting OR Shorthand Dictation	3		X
Administrative Services	3	X	
Records Management	3	X	
	14/15		

* Keyboarding (1 cr. hr.) and Keyboarding Letters and Reports (2 cr. hrs.) or 1 year of high school typing are prerequisites.

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ADMINISTRATIVE SUPPORT SERVICES

2 year associate degree

Courses	*Credit Hours*	*Required*	*Elective*
Office Automation Concepts	3	X	
Keyboarding Business Applications	3	X	
Business English	3	X	
	9 hrs.		
Word Processing Applications I	2/3	X	
Business Math	3	X	
Speedwriting or Shorthand Dictation	3		X
Introduction to Computers	2/3	X	
	10/11 hrs		
Word Processing Applications II	2/3	X	
Accounting I	3	X	
Business Communications	3	X	
Records Management	3	X	
	11/12 hrs.		
Word Processing Management	3		X
Principles of Management	3	X	
Administrative Services	3	X	
	9 hrs.		
TOTAL CREDIT HOURS:	39-41 hrs.		

General Education courses are also required for an Associate Degree.

* Keyboarding (1 credit hour) and Keyboarding Letters and Reports (2 credit hours) or 1 year of high school typing are prerequisite.

ADMINISTRATIVE SUPPORT SERVICES COURSE OFFERINGS

	ADULTS	*SERVICE COURSE FOR ALL STUDENTS*	*ADMINISTRATIVE SUPPORT SERVICE STUDENTS*	
			Elective	*Required*
Keyboarding	•	•		•
Keyboarding Letters & Reports	•	•		•
Keyboarding Business Applications				•
Office Automation Concepts				•
Word Processing Applications I				•
Word Processing Applications II				•

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ADMINISTRATIVE SUPPORT SERVICES COURSE OFFERINGS

	ADULTS	SERVICE COURSE FOR ALL STUDENTS	ADMINISTRATIVE SUPPORT SERVICE STUDENTS	
			Elective	Required
Business Mathematics		•	•	
Business English		•		•
Business Communications				•
Accounting I				•
Speedwriting		•	•	
Shorthand Dictation		•	•	
Adminis. Support Serv.				•
Records Management				•
Word Processing Mgmt.				•
Principles of Mgmt.				•
Microcomputer Applications	•			
Word Processing Operations	•			
BASIC Programming	•	•	•	
Introduction to Computers		•		•

ACCOUNTING

Philosophy

We believe that ...

- computers will continue to replace manual accounting procedures
- small businesses will continue to increase in numbers in Kansas, which allows for more accounting job opportunities
- large businesses will need accountants with information/data processing background who can convert their operations from manual to computerized systems.

CORE COURSES

Keyboarding
Introduction to Business
Business Law
Introduction to Computers
Business Communications
Economics I
Accounting I
Accounting II
Intermediate Accounting I
Intermediate Accounting II or Cost Accounting
Managerial Accounting

Recommended Electives

Economics II
Principles of Management
Business Math
Income Tax
Microcomputer Applications
Small Business Accounting
Internship

INFORMATION/DATA PROCESSING

Philosophy

We believe that ...

- a two-year degree program should prepare students for higher level or different careers than a one-year certificate program
- the use of microcomputers will continue to influence business
- information processing is moving from a centralized data processing environment to a decentralized managerial and support environment
- keyboarding is currently an essential skill as data processing careers change. A broader understanding of business goals and office functions is essential.

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- telecommunications, data base, and graphics will increase in importance and usage
- two-year institutions should begin phasing out some of the lesser-used languages
- the use of various microcomputer software packages is necessary for all information/data processing students

Kansas business education program planners must ensure that not too many students are graduating with degrees in Information/Data Processing. Even though the demand for programmers is increasing by a high percentage, when those statistics are translated into numbers, the numbers are small. For example, by 1990 in Kansas, 3,100 computer programming jobs will be available. This equates to 147 projected openings a year. In 1983, Kansas graduated 400 students with these skills from postsecondary two-year institutions. This figure does not include the graduates from the Kansas four-year institutions. (Data furnished by the Kansas Occupational Information Coordinating Committee, Kansas Department of Human Resources, 1984.)

It is interesting to note in the category of Computer Operators that Kansas only graduates 133 students a year but there are annual projected openings of 400.

CORE COURSES

Keyboarding
Introduction to Computers
Accounting I
Accounting II
Introduction to Business
Principles of Management
Microcomputer Applications
Fundamentals of Computer Programming
A Programming Language (selected by community need)
COBOL I
COBOL II
Small Systems Analysis and Design

Recommended Electives

Telecommunications
* FORTRAN
* Basic Assembler Language
* PASCAL
Data Base Management
Fourth Generation Languages
Office Automation Concepts
Business Communications
Economics I
Business Math
* BASIC
* RPG
* ADA (required by the U.S. Government, effective 1/84)

* A recommended way to teach languages is to have a two-hour Fundamentals of Computer Programming course as a co-requisite to each beginning programming course of 2 hours. In this way, information is not duplicated in each beginning course if multiple sections are taken.

COURSE DESCRIPTIONS

Accounting I (3 cr. hr.) Introduction to accounting fundamentals including journals, posting, ledgers, financial statements, and adjusting and closing entries using manual and computer systems.

Accounting II (3 cr. hrs.) Prerequisite: Accounting I. Accounts and records unique to partnerships and corporations. Preparation and use of financial statements of a corporation. Emphasis upon the interpretation and use of accounting data.

Administrative Services (3 cr. hr.) Prerequisites: Keyboarding Applications and Office Automation Concepts. Covers office careers; human relations; planning work flow; time management; office equipment, supplies, maintenance and training; forms simplification; giving dictation and teaching others; mailing services; equipment, telephone systems and techniques; teleconferencing; reference materials; travel arrangement; scheduling and calendaring; office procedures manual development; and ergonomics. Emphasis on language arts skills.

BASIC Assembler Language (BAL) (3 cr. hrs.) Emphasis on writing, compiling, and testing BAL programs. Designed for business programming or systems programming.

BASIC Programming (2 or 3 cr. hr.) Development of skill in writing and debugging programs for business applications on microcomputers.

Business Communications (3 cr. hr.) A study of interpersonal, verbal, non-verbal, and written communications. Also covers teleconferencing, giving dictation, and electronic communications.

Business English (3 cr. hr.) Development of correct spelling, punctuation, proofreading, grammar, sentence structure, and capitalization usage in business communications.

Business Law I (3 cr. hrs.) Principles of law applied to business. Topics include objectives of the law, crimes and torts, contracts, negotiable instruments, and agencies and employment.

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Business Mathematics (3 cr. hr.) Development of 10-key pad skill. Use of hand-held and desk-top calculators to solve business math problems including payroll, budgets, bank reconciliations, interest, loans, taxes, discounts, markup, markdown, insurance problems, investment, depreciation, and financial statement analysis.

COBOL I (3 cr. hrs.) Use of COBOL programming language to write and process programs using a computer.

COBOL II (3 cr. hrs.) Prerequisite: COBOL I. Continuation of COBOL I. Includes methods of building, maintaining and using files. Sort and report writing features are studied.

Cost Accounting (3 cr. hrs.) Prerequisite: Accounting II. An analysis of the principles of cost accounting as applied to the job order and process systems.

Data Base Management (3 cr. hrs.) Prerequisite: one programming course. Data management techniques involving records, files and data bases. File organization, access methods, and the development of an inquiry data base are included. Techniques and uses of data base systems in industry and business.

Economics I (3 cr. hrs.) Fundamental problems of contemporary approaches to economics. Topics include the basic elements of supply and demand; prices; national income determinations; money and banking; monetary and fiscal policy.

Economics II (3 cr. hrs.) Prerequisite: Economics I. Continuation of Economics I with emphasis on supply and demand, theory of the firm and market structures.

FORTRAN (3 cr. hrs.) Prerequisite: Intermediate Algebra. Use of FORTRAN programming language to solve business problems. Computer used in compiling and executing programs.

Fourth Generation Language (3 cr. hrs.) Writing, compiling and testing programs using one of the new fourth generation languages.

Income Tax (3 cr. hrs.) Study of federal and state tax laws for filing of individual income tax returns.

Intermediate Accounting I (3 cr. hr.) Prerequisite: Accounting II. Conceptual and technical aspects of financial accounting theory and the procedures of application. Includes theory and procedures of cash, receivables, inventories, and tangible fixed assets.

Intermediate Accounting II .) Prerequisite: Intermediate Accounting I. A continuation of financial accounting theory as it pertains to liabilities, capital, retained earnings, accounting changes, statement of changes in financial positions, and inflation accounting.

Introduction to Business (3 cr. hrs.) The nature, scope, and components of businesses and how they are organized and managed. Relationship of business, government, and consumers, the multinational nature of business, and external and internal forces that affect business and the economy.

Introduction to Computers (3 cr. hr.) A study of computer technology and terminology, uses of computers in society, ethics of computer use, computer applications, the processing cycle, systems selection, and career opportunities. A separate course in BASIC programming for microcomputers may be offered.

Keyboarding (1 cr. hr.) A short course for 9-12 weeks that covers the touch system for operation of the alphanumeric keyboard and the ten-key numerical pad. Emphasis on knowledge of key locations, a straight-copy speed of 30 words per minute and an accuracy level of not more than two errors per minute (depending on length of course). Electronic correction of errors. Basic skill development for inputting information into a computer terminal swiftly and efficiently. May use electric typewriters, electronic typewriters, word processors and microcomputers.

Keyboarding Letters and Reports (2 cr. hr.) A basic typing applications course for personal or business use. Development of speed and accuracy in typing current business letters (various simplified styles and full block style); tabulations; simple reports with endnotes, footnotes, and tables; and composition at the keyboard. Emphasis on grammar, spelling, punctuation, and proofreading. May be offered as a review course for adults.

Keyboarding Business Applications (3 cr. hr.) Prerequisite: one year high school typing or Keyboarding Letters and Reports. Emphasis on the production of management reports and correspondence for law, medical, accounting, real estate, financial, and architectural firms using business standards for style and mailability. Use of the most sophisticated equipment available -- electronic typewriters, word processors, OCRs, etc. Input media may be dictation tapes, handwritten copy, or typewritten copy.

Machine Transcription (2 cr. hr.) A course designed to develop skill in the use of transcription equipment, including transcribing recorded messages quickly and accurately with transcription being accomplished on both word processing terminals and typewriters. Emphasis will be placed on vocabulary building, proper punctuation, spelling, letter styles and placement, proofreading, and grammar.

Managerial Accounting (3 cr. hrs.) Prerequisite: Accounting II. Use of accounting information to analyze and interpret management problems, concepts of costs, and return on investments.

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Microcomputer Applications (1 cr. hr.) A short course for adults only. Hands-on business applications using the microcomputer. May include software programs for one of the following: spreadsheets, database, accounting, inventory, and project management. Does not include word processing.

Office Automation Concepts (3 cr. hr.) Office automation history, procedures, changes in organizatinal structure, document workflow, equipment used by management and administrative services, and career opportunities are covered. Development of word processing (wp) skills in keyboarding, storing, retrieving, and printing. Proficiency in text-editing skills including insert, delete, move, copy, boldface, superscript, subscript, underscore, pagination, and search and replace. Knowledge of telecommunications, including electronic mail.

PASCAL (3 cr. hrs.) Use of PASCAL programming language in solving business problems. Emphasis on function and use of statements in writing structural code. Computer used in compiling and executing the programs.

Principles of Management (3 cr. hr.) A study of management theory and practice; organizational structure and design; decision making fundamentals; management by objectives; coordination and control; manager training, development and performance; motivational systems; and communications.

Records Management (3 cr. hr.) A management course which includes records management principles, program organization, maintenance, records generation and control (filing systems and rules taught in 1-2 weeks), active records, retrieval systems, equipment, records retention scheduling, protection, records centers, legal issues and technology of records management.

RPG Programming (3 cr. hrs.) Use of Report Program Generator language to write programs and define, code, test, debug, and document programs. Computer used in compiling and executing programs.

Shorthand Dictation (3 cr. hr.) Prerequisite: one year of high school shorthand or 1 semester of college shorthand. An elective course to maintain or develop writing skill of 80 wam (or higher if students desire). For students who have learned a symbol shorthand system previously and desire a review.

Small Business Accounting (3 cr. hrs.) Emphasis on basic accounting procedures needed to start and operate a small business. *Designed for owners of small businesses*, not accounting students. This content should be included in Accounting I and II for accounting majors.

Small Systems Analysis and Design (3 cr. hrs.) Prerequisite: Introduction to Computers. A study of hardware, software, and peripherals of micro and mini computers. Emphasis on feasibility studies and budgeting for systems, and human elements and technical approaches involved in systems design and implementation. How to solve problems using computers included.

Speedwriting (3 cr. hr.) Development of writing speed of 80 wpm using an alphabetic (nonsymbol) system of shorthand. Not a requirement for students with previous shorthand skill.

Telecommunications (3 cr. hrs.) Prerequisite: Introduction to Computers. Study of data and voice communications systems and the hardware and software requirements. Topics include networking, protocols, conversion systems, satellite communications, and video systems.

Word Processing Applications I (2/3 cr. hr.) Prerequisite: Business English. Preparation of documents including letters with envelopes, form letters with variables, lists of names and other information to be merged into form letters or reports, storage and assembly of form paragraphs, and storage and retrieval of repetitive words and phrases.

Word Processing Applications II (2/3 cr. hr) Indepth work on business applications covered in Word Processing Applications I course, including "list" processing and report preparation with block indents, tables, outline formats, endnotes, footnotes, table of contents, plotting, and filling in preprinted forms, statistical forms, math calculations, alphanumeric sorting and selection of records. Machine transcription may be included. The course objective is to develop a complete understanding of the machine logic and to develop the students' ability to apply this logic to various business applications, as well as the ability to distribute the completed work.

Word Processing Management (3 cr. hr.) Includes career paths, job descriptions, hiring and firing, internal and external training, style and forms manual development for principals and operators, workflow, electronic filing systems, proofreading functions, equipment, feasibility studies, cost justifications, vendor overview, hardware, software, peripherals, environmental planning, post-installation conversion, work measurement, productivity, budgeting, telecommunications, OCR, and typesetting.

Word Processing Operations (1 cr. hr.) A short intensive course from 3-8 weeks long. A brief introduction to word processing hardware and software with emphasis on hands-on word processing experience.

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HARDWARE AND SOFTWARE SELECTION

Electric Typewriters/Electronic Typewriters

Several states (Wisconsin and Indiana, for example) recommend that neither electric typewriters nor electronic typewriters be purchased. Some of the reasons for this rationale are the reality that the trend in business is the purchase of microcomputers and the realization that the microcomputer is a more versatile tool in the business classroom than the typewriter. The truth of these statements cannot be denied. It is logical that an electric typewriter, with the hundreds of mechanical parts, is not a wise investment in 1984. However, some Kansas business educators feel the electronic typewriter is a good stepping stone to the microcomputer.

No matter what the philosophy, the goal of every school in Kansas should be to purchase the most versatile, up-to-date equipment as possible. With limited funds, teachers and administrators face difficult buying decisions. The equipment purchased must be used in as many business classes as possible, must be upgradable, must be the type of equipment used in business, and must be purchased with a look toward the future.

HARDWARE

Word Processors

Hardware and software needs are different for secondary schools than postsecondary schools. Secondary schools are, generally, providing an acquaintanceship level skill. Postsecondary schools are providing proficiency-level skills. However, both secondary and postsecondary schools should be using equipment in the classroom that is being used in businesses.

In large businesses, there has been a trend from standalone word processing to shared or clustered systems and now back to standalone word processing. Standalone walk-up work stations are being used by both secretaries and executives. According to a recent survey by Stevenson and Hanson Research Group whose findings were published in *Office Administration and Automation* in August, 1983, Wang has more word processing/information systems work stations installed than any other company; IBM is second after Wang. This same survey indicated that 78% of the respondents have word processors and that 40% expected to add more. In addition, 34% of the respondents have microcomputers, with 36% of those respondents expecting to add more.

Research by Housh (1984) on word processing instruction in postsecondary schools in the United States shows that 52% of the schools use dedicated word processors; 33% use word processing software on a microcomputer; 6% word processing software on a minicomputer; 6% word processing software on a mainframe computer; and 3% use some other means.

Housh's study shows that 35% of the respondents plan to acquire additional word processors from the same vendor; however, funds were a major factor in not updating equipment. Because funds are a factor, a few postsecondary institutions are purchasing the IBM PC or Apple for word processing training. However, according to *The Seybold Report on Professional Computing* (January 2, 1984, p. 23) "anyone doing production word processing should be using a dedicated word processor." If the goal of postsecondary instruction is to teach proficiency level skills, schools should be using the same equipment that business is using.

Some educators feel postsecondary students should be trained on more than one vendor's equipment so that they will be better prepared for the job market. This comment was echoed by four respondents in Housh's survey who are able to do this in their classrooms; however, businesses indicate that the equipment is not as important as understanding the concepts and functions.

In businesses, the most frequently purchased dedicated word processors are:

Wang OIS 40, 50, 130, 140
IBM Displaywriter
NBI OAsystem 64
CPT 8505, 8510, 8515, 8520, 8525
Micom 2001
Exxon 510, 520
Compucorp
Xerox 850
Lanier EZ2

Housh's postsecondary study indicated there are more IBM Displaywriters being used in the classroom than any other system, followed by Wang, CPT, and NBI.

STANDALONE DISPLAY WORD PROCESSORS
USED IN POSTSECONDARY SCHOOLS

	No. of Keyboards	*Percent*
IBM Displaywriter	183	33.6%
Wang	63	11.5%
CPT	53	9.7%
NBI	52	9.5%
Digital (DEC)	46	8.4%
Exxon	33	6.0%
A.B. Dick	31	5.7%
Dictaphone	26	4.8%
Lanier	26	4.8%
Other	34	6.0%

According to Housh's survey, the most popular minicomputers being used for word processing in postsecondary institutions are DEC and Wang.

Microcomputers

In the secondary schools in Kansas, computers are more prevalent than dedicated word processors. More Apple systems are in Kansas schools than any other system, followed by the Radio Shack TRS 80. Over 10,000 educational software programs are available for the Apple, which is more than for any other system; however, the software is rapidly being converted for the IBM PC.

Microcomputers can be used to teach computerized accounting, inventory systems, budgeting, and word

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processing. While dedicated word processors have those same capabilities, the cost of hardware and software may be higher.

The average retail amount spent in business per system for an IBM PC or Wang PC is $5,500, with an average of $3,500 for an Apple or TRS 80. Most schools can purchase an Apple or TRS 80 for $1,500 to $2,500, and the IBM PC for $2,000 - $3,000.

According to International Data estimates in 1982, Apple sold 33% of the total number of microcomputers in the U.S., IBM sold 26%, Tandy (Radio Shack) 13%, and other companies 28%. In 1983, IBM surpassed Apple in total units sold, and Tandy's share of the market dropped substantially. It should be noted that there are more installed Apple computers in businesses and schools than any other system.

Numerous sources will indicate that in purchasing any kind of computer, software must be an important consideration. However, the following questions should be asked about the hardware.

1. Do you need color or sound? For business education, the answer to this question is usually "no."
2. Is networking capability essential?
3. How much memory will your objectives for computers require?

Computers used for programming in Pascal, computer literacy, or computer assisted instruction may be different than those used for introducing students to word processing, spreadsheets, or data base management programs. Dr. Stanley Pogrow, University of Arizona, feels there are five hardware factors that should be considered: function keys, an 80-column screen, at least 128K of memory, a networking option, and CP/M and/or MS DOS capability. He feels the IBM PC is the most cost-effective way to introduce students to an environment most like the office (*Electronic Learning*, January, 1984). Other advisors disagree, however, because they feel the IBM PC is still too expensive to justify in the classroom. The more IBM lowers the price, the less valid this criticism will become.

If one of the educational objectives is telecommunications, there are three features that make this function easier and better: an 80-column screen for those data bases formatted for a high quality display; the availability of software for downloading (so you can save money by printing after you are off-line); and the availability of compatible modems with auto dial. The Apple IIe with an 80-column card, the IBM PC, and the TRS-80 Model 4 offer all of these features.

HARDWARE RECOMMENDATIONS:

2 Disk Drives
* 128 Kb RAM (minimum)
16-24 line screen
Letter quality printer (required for word processing)
-- $1,250 to $2,600
Dot matrix printer -- $100 - $1,995
Letter quality Dot matrix printer -- $1,200 - $2,000
Plotters (postsecondary) -- $1,000 - $1,500

* For data processing instruction, 512 Kb is best and 256 is adequate.

SOFTWARE

Software programs may be purchased for a variety of applications such as word processing, graphics, spreadsheets, math, accounting, and inventory. Word processing appears to be the most used software program both at home and in the office. When integrating software into business education classes, the course content may not necessarily change, but new teaching plans and strategies will need to be developed.

Word Processing

Some of the best word processing software are designed for the IBM PC. The following word processing software packages for the IBM PC are recommended by *The Seybold Report* (March 7, 1983; May 2, 1983; January 2, 1984):

NBI WP Program
Multimate
Word Perfect
Display Write 1 and 2

Popular word processing software available for other systems include Super Scripsit II, AppleWriter IIe, Word Handler, Magic Window, Benchmark, Volkswriter, and Format II. Word Star, one of the best selling word processing packages, takes a great many commands to use and may take longer to learn (*Info World*, March 26, 1984, p. 66). Bank Street Writer is designed for elementary school students and is not recommended for secondary or postsecondary students. South-Western Publishing Co. offers educational versions of AppleWriter II and Homeword. A tutorial program for Word Handler is available through the Computer Hutch, P.O. Box 12298, New Brighton, MN 55112. New software is continually being developed. A good evaluation source of software for the business office is *The Seybold Report* (see Instructional Materials Section, Newsletters, for further information).

The applications that can be done using word processing software vary greatly. Word processing software for microcomputers usually does not include all of the applications as a dedicated word processing systems software. Frequently, word processing software for microcomputers does not include a list/merge capability; one has to buy a separate program disk to merge names and addresses into a form letter. Most dedicated word processing vendors allow a user to purchase only the applications that they need. If the user needs sophisticated applications such as footnoting and table of contents generation, the user pays more for the software disk; however, all applications are bundled on one disk.

Since the role of the secondary school in teaching word processing is different than the postsecondary school, the software needs also vary as can be seen in the following chart.

Needed Features of Word Processing Software

	Secondary	*Post-secondary*
Basic text editing	X	X
Merging information	X	X
Assembling form paragraphs	X	X

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	Secondary	Post-secondary
Using repetitious words/phrases		X
Alphabetic sorting and selection		X
Spelling dictionary		X
Math		X
Handle preprinted forms		X
Handle medical and legal applications		X
Table of contents generation		?
Automatic footnoting		?
Communications		?
Handle wide documents		X

Keyboarding

To develop keyboarding skill, two software packages are popular: Master Type and Typing Tutor. See the Instructional Materials Section for a listing of keyboarding software.

Accounting

A variety of software packages are being used for accounting applications. As can be seen from the following table based on Housh's data, accounting software from South-Western Publishing Co. is most popular at the postsecondary level, with software from Peachtree Associates the next most popular.

Software Packages Used on Microcomputers for Accounting Applications

South-Western	6
Peachtree	5
VisiCalc	4
Radio Shack Accounting	2
Micro Pro Accounting	1
Lotus 1-2-3	1
CPT Math Pack	1
Accounting II Plus	1

Special Applications

Many postsecondary schools will use micro/personal computers in a variety of courses and for a variety of applications. The following information is presented for the schools that do have special applications.

Spreadsheet Software

- VisiCalc
- Multiplan
- PeachCalc
- Lotus 1-2-3 (outselling VisiCalc and Multiplan two to one)
- Super Calc

Database Software

- dBase II (very powerful and most frequently used)
- dBase III
- PFS: File
- Database Manager II - The Integrator
- Metafile

Graphics

- DRGraph (from Digital Research)
- Apple's Lisa-Draw (for the Lisa)
- Apple's MacGraph
- Fast Graphs
- Graphwriter

Integrated Software - spreadsheets, graphs, word processing with windowing capabilities

- Lotus 1-2-3
- Corporate MBA
- Apple's Lisa software (expensive)
- Xerox Star software (expensive)
- Windows
- Visi On (and supporting products)
- Super Calc 3

Information processing skills can be integrated into many already existing courses. In fact, students do not need to be able to program to use microcomputers. Like people in business, students can use software programs that can be purchased. Some examples of software programs and the courses in which they could be used are listed below:

SOFTWARE		*COURSES*
MATH -	Addition, subtraction, multiplication, division, percents	Business Math Office Procedures Accounting
ACCOUNTING -	Accounts payable Accounts receivable General ledger Payroll Tax preparation	Accounting
SPREADSHEETS -	Financial statements Sales projections Budget preparation Stock evaluation	Accounting, Office Procedures, Economics Marketing * Management * Computer Literacy Economics *

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SOFTWARE		*COURSES*
INVENTORY -	Recording items in inventory	Marketing Office Procedures
GRAPHICS		Office Procedures Marketing
DATA COMMUNICATION		Office Procedures
DATA BASE MANAGER		Business Law Marketing
DATABASE MANAGEMENT -	Keeping track of data in a logical way so it can be retrieved and used in reports	Office Procedures * Data Processing * Computer Literacy
WORD PROCESSING -	typing, revising, storing and printing correspondence	Office Procedures Word Processing Advanced Keyboarding Application Computer Literacy

Postsecondary schools should teach usable, employable skill on these applications. Secondary schools would provide an acquaintanceship level skill.

In the future, it is expected that more schools will purchase the IBM PC for business education since so many businesses use them. Since a great deal of software is available for the Apple, many schools may purchase the Apple IIc instead of the Apple IIe because it is less expensive but still has adequate capabilities. Schools should beware of purchasing microcomputers from companies that may go out of business, because service, parts, and software will not be readily available if the manufacturer does not exist. The Tandy 2000, which is partially IBM PC compatible but not TRS 80 compatible, may also be a choice of some schools.

* at the postsecondary level only

QUESTIONS TO ASK BEFORE YOUR PURCHASE OF WORD PROCESSING/MICROCOMPUTER HARDWARE/SOFTWARE

It is recommended that at least three or four different systems and/or software packages be considered before the purchase. Some questions to keep in mind while looking at hardware/software are:

1. Is the firm (both the manufacturer and the local dealer) reliable and reputable? Ask several people for a representative sample.
2. What is the length of time it will take to have the hardware repaired? How many qualified technicians are available? Is there a maintenance contract? Ask several users--not just "word of mouth."
3. Is training available? Vendors have different policies. How is it provided? How long? Where? What is the cost of additional training?
4. Is there a good training manual for the software you are considering? Have exercises been developed for specific classroom use or will the manual need to be rewritten? A good index? Has the software been on the market long enough to be "debugged?"
5. Do not base your decision on hardware alone, especially when purchasing a microcomputer. What are the capabilities for future expansion? Capability both now and in the future? Make certain your choice is not obsolete (and costly) in the future.
6. Ask to sit down and operate the hardware and software. Is it logical? Easy to use? Code oriented?
7. Obtain a customer reference list detailing its use in the community? Extent and applications? (Visits or phone calls to other educators should be conducted. Be receptive.)
8. Trade-in value? Is it better to lease or buy?
9. Indicate to the sales representative the different types of hardware/software you are considering. Encourage comparisons then determine which features you need and the ones you can live without. The initial inquiry should be on the basic hardware configuration, the type of storage media used, price range, the advantages the equipment has in educating students compared with other equipment on the market, software available, and quality of service.
10. If possible, all of the business teachers who will be using the equipment should see the demonstration. Ask questions and make certain they are answered to your satisfaction. Make certain you thoroughly understand how different types of equipment can handle your applications. Beware of a "canned" demo where everything is worked out ahead of time -- this may mean the system is not flexible.

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11. Be aware of "hidden charges" -- installment fees, training costs, service maintenance, delivery charges, and future equipment updates before you decide to purchase.

12. Do not be swayed by the sales representative's personality. After a sale is made, you will be dealing with the support and service people. Make it a point to meet these people. Ask for a user's list and call for references. Go back a second time to look at the equipment before making a final decision. Is there an 800 number to answer questions?

13. You may be entitled to a discount because the hardware/software is used in the school.

14. Do not buy "futures." If the hardware is not available anywhere, be wary. The delivery timetable may not be followed, and your hardware may be delivered months following the purchase.

15. Obtain information on office layout and furniture. Both factors can affect the comfort and productivity of the operators. Check on noise level, temperature, static, electrical circuits, lighting and dust contamination.

16. How long is the warranty? What does it cover? Does it go into effect when the equipment is purchased or installed?

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CURRICULUM IDEAS

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Secondary

The concepts of word and information processing systems should be incorporated into as many classes as possible. This involves teaching what word processing means, why it has developed, and where it fits into the information processing system.

Because of the lack of adequate quantity of equipment, secondary students may have to work in pairs or spend a certain percentage of hours during an Office Support Procedures class or Keyboarding Business Applications working on automated equipment. Rotation in various units is usually the only method available in most high schools.

When teaching with limited automated equipment, it is suggested that the students have a minimum of 10 hours of "hands on." Any less than ten hours will give students an inadequate knowledge of the system and concepts. In ten hours, the student will have some understanding about basic text editing. If more class time is available, students may have time to complete several exercises in merging names and addresses into form letters. Because of the equipment limitations, some schools introduce word processing applications in the keyboarding course.

The related word processing units may include utilizing skills in dictating and transcribing, supervising, proofreading, inputting, and revising work previously recorded. Skills such as teamwork and productivity should be stressed.

The following is a list of suggestions for word processing/keyboarding classes (Susan Meerewenberg, 1982).

1. Assign transcription from typed rough-draft copy.
2. Assign transcription from machine dictation originated by classmates.
3. Assign transcription from unfamiliar handwriting.
4. Conduct exercises in listening skills and following directions from an intricate, oral set of instructions given only once.
5. Assign time management exercises in which students set priorities and measure their own productivity with time standards they set for themselves.
6. Supervise preparation of a procedures manual to be used as a model for the concepts class.
7. Assign exercises in the use of continuous paper.
8. Assign portions of simulations involving workforce activities among the students for typing rough drafts, editing and making changes, typing final copy, and filing and distribution.
9. Conduct exercises and applications in using reference materials.

Students should be taught about other components of information processing such as electronic mail, micrographics, video conferencing, microcomputers and how they interface with mainframe computers, and functions of minicomputers and optical character recognition equipment.

Listed below are teaching ideas (*Electronic Learning*, April 1983) for secondary education.

Accounting/Bookkeeping:

1. Using a practice set, have the students set up a company and keep the books on the microcomputer. The students could produce payroll checks, accounts payable checks, invoices, and profit and loss statements.
2. Use actual IRS forms and schedules and a tax preparation program.

Keyboarding Business Applications:

1. Use a typing tutor program to help students build and improve typing speed and accuracy.
2. Introduce students to word processing.
3. Have students key in assignments from other classes, such as English.

Office Support Procedures

1. Introduce the data base manager. Have the students define a set of data items that one might find in a company personnel file such as name, address, date hired, supervisor, building, years of experience. Students can then use the retrieval capabilities to ask for reports such as all employees hired since a given date or those who have less than three years of experience.
2. Introduce the graphics package. Ask students to produce a bar chart or graph based on the information stored on the data base manager.
3. Introduce a data communications package. Have students type messages and send through electronic mail.

Postsecondary

Research by Housh (1984) indicates that postsecondary training on equipment is done individually. The respondents to her questionnaire indicated 81.7 percent of the students work individually, while 16.1 percent work in pairs and 2.2 percent work in small groups.

Several schools responding to her survey mentioned that the teacher demonstrates a function and students sign up for lab time to reinforce that function with hands on. Indications are that 2-5 hours a week are spent for demonstration time. One institution requires three hours of lab work beyond each 30 hours in class. The lab is staffed by a trained professional assistant.

Respondents to Housh's survey stated that students should be trained on more than one vendor's piece of equipment so that they will be better prepared for the job market. Many of the postsecondary institutions are attempting to diversify their classroom equipment, although they mention that funds are a major factor in not updating equipment.

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TEACHING TECHNIQUES

Many of the comments compiled by Housh (1984) about curriculum could be used by secondary and postsecondary instructors. Those techniques include the following:

Incorporate real work applications.

Include more rough draft copy.

Assign a student as supervisor of the word processing operations for a week. Rotate. Role play/negotiate with users.

Develop a Word Processing Procedures Manual.

Use machine transcription in conjunction with word processing.

Offer a class or unit in dictation techniques. Exchange tapes and transcribe.

A theory class should be a prerequisite to the hands-on training classroom.

Use reference sources and periodicals on office technology. In some institutions, magazines articles and reports are given up to 15 percent of the final grade in Word Processing Concepts.

Increase emphasis on editing and proofreading skills. Students should be taught to be "error conscious." An understanding of basic proofreader marks is necessary. One institution reports giving a proofreading test once a week. The student uses proofreader marks to mark all errors and then keyboard a corrected copy.

Productivity should be stressed, which means that careful planning must be emphasized to help ensure maximum efficiency and increase productivity with all projects.

Introduce students to electronic filing techniques using data base and word processing software.

One institution noted that making carbon copies is almost a lost art. Instead of "cc" on a document, students should probably be taught to type "pc," meaning a photocopy has been sent, or "c" which indicates a copy made by any duplicating method.

Teach students to have a good eye for text format (chart, form, table, etc.) on the screen. Most projects can be set up by eye rather than by counting line/spaces (which also saves much time).

Prepare all final applications on appropriate paper -- letter must be on letterhead, memos must be on memo forms, business reports must be on plain paper, etc.

Have several students co-author a report or article. Exchange and have the students edit the drafts.

Additional proofreading skills are needed to proofread documents created from stored language. Are the right paragraphs assembled in the right order?

Role play as the originator of a document and prepare a series of thank you letters, with some having personalized paragraphs.

Field trips could handle the technology not in the school: i.e., telecopying, electronic mail; telecommunications.

The DAVEA Center in Illinois suggests the following in the case of "down time."

Sometimes in the office, you will experience downtime, which means the machine you are working on is not operational at the present time. This downtime might occur in class, and the word processing machine is not able to be used this class period. Should this occur, please select from the following skills to learn for that segment of the class when your machine is down:

	Date Completed	*Teacher's Initials*
Letter Typing Review	_____	_____
Mailable Letters (do at least 4 projects)	_____	_____
Electronic Typewriter	_____	_____
Memory Typewriter	_____	_____
Filing: Alphabetic	_____	_____
Numeric	_____	_____
Business Spelling	_____	_____
Punctuation	_____	_____
Capitalization	_____	_____
Dictaphone (do 3)	_____	_____

The following table indicates the emphasis currently in postsecondary classrooms.

HANDS-ON APPLICATIONS STUDENTS ARE INSTRUCTED TO PERFORM IN WP TRAINING

HANDS-ON APPLICATIONS	*NO. OF RESPONDENTS*	*PERCENT*
Basic WP System Operation	80	9.8%
Basic Text Editing	82	10.0%
Merging Information	84	10.2%
Assembling Forms/Paragraphs	77	9.4%
Using Repetitious Words or Phrases	76	9.3%
Alphanumeric Sorting of Records	44	5.4%

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HANDS-ON APPLICATIONS	NO. OF RESPONDENTS	PERCENT
Alphanumeric Selection & Sorting of Records	32	3.9%
Math--add, subtract, multiply, divide	46	5.6%
Plotting Preprinted Forms on Printer	21	2.6%
Plotting Preprinted Forms Using Plastic Forms Overlay	5	0.6%
Communications With a Work Station	14	1.7%
Communications with OCR	7	0.9%
Table of Contents Generated on a Work Station	45	5.5%
Automatic Footnoting	34	4.1%
Spelling Dictionary	56	6.8%
Accounting	9	1.1%
Spreadsheet	7	0.9%
Legal Applications	32	3.9%
Medical Applications	24	2.8%
Statistical Technical Typing	37	4.5%
Electronic Mail	8	1.0%
TOTAL	820	100.0%

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TESTING AND EVALUATION

TESTING AND EVALUATION

Housh discovered in her survey that the evaluation method most frequently used in equipment testing is the check sheet. See example in Appendix C for the IBM Displaywriter from State Fair Community College, Sedalia, Missouri.

Several postsecondary institutions are using attendance as a portion (up to 15 percent) of the final grade. The grade is based on the following:

0-3 absences per semester hour of credit	A
4 absences per semester hour of credit	B
5 absences per semester hour of credit	C
6 absences per semester hour of credit	F

Institutions indicate they are administering paper/pencil tests to beginning word processing students and performance tests to advanced students. On the performance tests, the material is already on a disk and students are asked to revise.

TYPES OF TESTS GIVEN FOR WP APPLICATIONS/OPERATIONS

TYPE	*NUMBER OF RESPONDENTS*	*PERCENT*
Paper/pencil test on commands	48	27.7%
Mailability of assigned letters, reports, etc.	55	31.8%
Performance Test using WP Equipment	67	38.8%
* Others	3	1.7%
TOTAL	173	100.0%

* Includes concepts, grammar, and creative design.

One postsecondary institution indicated that to earn a passing grade in Advanced Keyboarding (Advanced Typing), a student must achieve a speed of at least 55 wpm with 5 or fewer errors on at least four of the straight-copy timings. To receive an "A," a student should keyboard at the average rate of 58+ wpm for the first quarter and 65+ wpm for the second quarter.

One postsecondary institution offers keyboarding which is open to all students who have had less than one year of formal instruction in typewriting or consent of the instructor. The instructor gives 3 minute timed writings for 50% of the grade, with a 6-error limit until mid term; then a 3-error limit. The grading standards are as follows: A = 35+ wpm; B = 30-34 wpm; C = 26-29 wpm; D = 22-25 wpm.

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ADULT/EVENING TRAINING

ADULT/EVENING TRAINING

A high percentage (93%) of the respondents to Housh's survey indicated they were offering evening classes with that enrollment strong in 75 percent of the schools. In addition, the following classes were offered.

Beginning WP Class	87.4 percent
Advanced WP Class	55.2 percent
Do not offer equipment training in Advanced WP	44.8 percent

The institutions reported they are offering the same curriculum at night as during the day.

The number of hours the night class is offered ranged from 1 to 5 hours a week, meeting for 1 to 3 nights a week for a total of 12-60 hours a semester. Some institutions noted they only offer training on equipment, not concepts, at night. Several institutions offer 1 to 3 hours of concepts followed by 1 to 3 hours of lab time. Two institutions offer three separate 10-week courses: WP Systems I (Basic Concepts) - 2 hours lecture per week plus 2 hours lab time; WP Systems II - 2 hours lecture per week plus 4 hours lab time, WP Systems III (Supervisinn) - 2 hours lecture plus 4 hours lab time.

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INSTRUCTIONAL MATERIALS

INSTRUCTIONAL MATERIALS

The respondents to Housh's survey indicate that teacher-prepared and vendor-prepared materials were somewhat better than textbook publisher's materials.

TRAINING MATERIALS USED TO INSTRUCT STUDENTS ON WP EQUIPMENT

MATERIALS	*NUMBER OF RESPONDENTS*	*PERCENT*
Teacher Prepared	75	37.1%
Vendor Prepared	75	37.1%
Textbook Publisher's Material	50	24.8%
* Others	2	1.0%
TOTAL	202	100.0%

* Real jobs and students assignments from other classes.

Two reference books which were listed as excellent in Housh's survey are as follows:

Wiley Office Handbook, Kutie and Huffman, Wiley Publishing Company

How 3, A Handbook for Office Workers, Kent Publishing Company

Many secondary schools in Kansas use Mona Casady's *Word/Information Processing Concepts* (South-Western Publishing Company) or Marilyn Popyk's *Word Processing - Essential Concepts* or *WP and Information Systems* (Gregg/McGraw Hill).

Many postsecondary instructors use Wiley Publishing Company materials. Respondents to Housh's survey (1984) indicated that Allyn and Bacon's *Concepts in Word Processing: The Challenge of Change* has an excellent instructor's manual, including transparencies, lecture notes, and tests.

PARTIAL LIST OF WORD/INFORMATION PROCESSING/OFFICE AUTOMATION CONCEPTS TEXTBOOKS

Arntson, L. Joyce. *Word/Information Processing: Concepts and Procedures*. Kent Publishing Company, 20 Park Plaza, Boston, MA 02116, 1983.

Bergerud, Marly and Jean Gonzalez. *Word Processing Concepts and Careers*, 3rd Edition. John Wiley and Sons, Inc. Publishers, 605 Third Avenue, New York, NY 10158, 1984.

Bergerud, Marlyn and Jean Gonzalez. *Word/Information Processing: Concepts of Office Automation*, John Wiley and Sons, Inc. Publishers, 605 Third Avenue, New York, NY 10158, 1984.

Boyce, Betty and Marilyn Popyk. *The Electronic Office and You: Word Processing Concepts*, Gregg Division, McGraw-Hill Book Company, New York, NY 10020, 1984.

Casady, Mona. *Word/Information Processing Concepts*. South-Western Publishing Company, Cincinnati, OH, 1984.

Cecil, Paula B. *Office Automation: Concepts and Applications*. Benjamin/Cummings Publishing Company, 2727 Sand Hill Road, Menlo Park, CA 94025, 1984.

Cecil, Paula B. *Word Processing in the Modern Office*. Benjamin/Cummings Publishing Company, 2727 Sand Hill Road, Menlo Park, CA 94025, 1984.

Cecil, Paula B. *Management of Word Processing Operations*. Benjamin/Cummings Publishing Company, 2727 Sand Hill Road, Menlo Park, CA 94025, 1984.

Finn, Nancy B. *The Electronic Office*. Prentice-Hall, Inc., College Operations, Englewood Cliffs, NJ 07632, 1983.

Kleinschrod, Walter and Leonard Kruk and Hilda Turner. *Word/Information Processing: Administration and Office Automation*, 2nd Edition, Bobbs-Merrill Educational Publishing, 4300 West 62nd Street, Indianapolis, IN 46206, 1983.

Popyk, Marilyn. *Word Processing: Essential Concepts*, Gregg Division, McGraw-Hill Book Company, New York, NY 10020, 1983.

Popyk, Marilyn. *Word Processing and Information Systems*, Gregg Division, McGraw-Hill Book Company, New York, NY 10020, 1983.

Rosen, Arnold and Rosemary Fielden. *Word Processing*, 2nd Edition. Prentice-Hall, Englewood Cliffs, NJ 07632, 1982.

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Wagoner, Kathleen and Mary Ruprecht. *Office Automation: A Management Approach.* John Wiley and Sons, Inc. Publishers, 605 Third Avenue, New York, NY 10158, 1984.

Wagoner, Kathleen and Mary Ruprecht. *Office Automation Technology and Concepts,* John Wiley and Sons Publishers, 605 Third Avenue, New York, NY 10158, 1984.

Waterhouse, Shirley A. *Office Automation and Word Processing Fundamentals,* Harper & Row Publishers, Inc., 10 East 53rd Street, New York, NY 10022, 1983.

Will, Mimi and Donette Dake. *Concepts in Word Processing: The Challenge of Change.* Allyn and Bacon, Inc. Publishers, 470 Atlantic Avenue, Boston, MA 02210, 1982.

PARTIAL LIST OF WORD/INFORMATION PROCESSING APPLICATIONS TEXTBOOKS

Arnston, L. Joyce. *Word/Information Processing Applications, Skills Procedures.* Kent Publishing Company, 20 Park Plaza, Boston, MA 02116, 1983.

Casady, Mona. *Business Letter Typing.* South-Western Publishing Company, Cincinnati, OH.

Layman and Renner. *Word Processing Exercises for Word Processors, Micro-computers, and Electronic Typewriters.* Prentice Hall, Englewood Cliffs, NJ 07632

Mason, Jennie. *Word Processing Skills and Simulations.* Bobbs-Merrill Educational Publishing, 4300 West 62nd Street, Indianapolis, IN 46206.

Seraydarian, Patricia. *Word Processing Applications for Text Editors,* Houghton Mifflin, One Beacon St., Boston, MA 02108.

Seraydarian, Patricia. *Word Processing Applications for Electronic Typewriters.* Houghton Mifflin, One Beacon St., Boston, MA 02018.

Varner, Jane T. *Legal & Medical/Technical Applications,* SRA, Inc., 1540 Page Mill Road, Palo Alto, CA 94304, 1982.

Varner, Jane T. *Word Processing Operations, Document Preparation,* SRA, Inc., 1540 Page Mill Road, Palo Alto, CA 94304, 1982.

Wheeler, Carol Ann and Dalton, Marie. *WP Simulations for Typewriters and Text Editors.* John Wiley and Sons, Inc., 605 Third Avenue, New York, NY 10158.

Wheeler, Carol Ann and Dalton, Marie. *WP Simulations for Text information Processors, and Personal Computer.* John Wiley and Sons, Inc., 605 Third Avenue, New York, NY 10158.

PARTIAL LIST OF COMMUNICATIONS TEXTBOOKS

Barry, Robert E. *Business English for the 80's.* Prentice-Hall, Englewood Cliffs, NJ 07632.

Basic Grammar and Usage, Harcourt, Brace, Javanowich, Inc., 757 Third Avenue, New York, NY 10017.

Blumenthal, Joseph. *English 3200.* Harcourt, Brace, Javanowich, Inc., 757 Third Avenue, New York, NY 10017.

Brown, James. *Better Spelling, Fourteen Steps to Spelling Improvement,* D.C. Heath and Co., Levington, MA.

Cleary, Joseph and Lacombe, Joan M. *English Style Skill Builders,* Gregg/McGraw Hill, New York, NY 10020.

Dollar and Burnett. *A Guide to Successful Communications,* Allyn and Bacon, Inc., 470 Atlantic Avenue, Boston, MA 02210.

Feinstein, George. *Programmed Spelling Demons.* Prentice Hall, Inc., Englewood Cliffs, NJ 07632.

Fergus, Patricia. *Spelling Improvement: A Program for Self-Instruction,* Gregg/McGraw Hill, New York, NY 10020.

Guffey, Mary Ellen. *Business English,* Kent Publishing Company, 20 Park Plaza, Boston, MA 02116.

Guidebook to Better English. The Economy Company, Education Publishers, Oklahoma City, OK, 1978.

Himstreet, William C. and Baty, Wayne M. *Business Communications,* Kent Publishing Company, Boston, MA, 1984.

Kruse, Heringer, Lawry. *Proofreading.* Glencoe Publishing Company, 17337 Ventura Blvd., Encino, CA 91316, 1983.

Pearce, C. Glenn and Figgins, Ross I. *Business Communication Basics,* Wiley Publishing Co., 605 Third Avenue, New York, NY 10158, 1984.

Prochnow. *The Public Speaker's Treasure Chest.* Harper & Row.

Reigner, Charles G. *Correct Spelling.* Rowe.

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Seigle, *Dynamics of Business Communications*, Grid Publishing Company, Columbus, OH, 1984.

Smith, Leila. *English for Careers*, John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158, 1981.

Typing from Handwritten Copy, Dictation Disc, 240 Madison Ave., New York, NY 10016.

Verderber. *The Challenge of Effective Speaking*. Wadsworth Publishing Company, Belmont, CA

Wolf, Morris P. and Kuiper, Shirley. *Effective English for Business Communications*. South-Western Publishing Company, 5101 Madison Road, Cincinnati, OH 45227, 1980.

PARTIAL LIST OF MACHINE DICTATION/TRANSCRIPTION TEXTBOOKS

Ennis, Edith. Marilyn Price, Sheila Vedder. *The Transcription Specialist*. Harcourt Brace Jovanovich, Inc., 757 Third Avenue, New York, NY 10017.

Kupsh, Joyce, Donna Anderson, Lois Meyer and Ruth Moyer. *Machine Transcription and Dictation*. John Wiley and Sons, Inc., 605 Third Avenue, New York, NY 10016.

LaBarre, James and William Mitchell and Kaye Mach. *College Typewriting: A Mastery Approach, Advanced* Revised Printing. SRA, Palo Alto, CA 94304.

Melrose, John, Lorraine Missling, William Mitchell and Ron Schlattman. *Machine Transcription Practice--Education and Insurance*. Western Tape, 2761 Marine Way, Mountain View, CA 94062.

Meyer, Lois and Ruth Moyer. *Machine Transcription in Modern Business*. John Wiley and Sons., Inc., 605 Third Avenue, New York, NY 10016.

Mitchell, William and Patricia Ganser. *Modern Office Dictation*. Western Tape, 2761 Marine Way, Mountain View, CA 94042.

Pasework, William. *Machine Transcription Word Processing*. South-Western Publishing Company, 5101 Madison Road, Cincinnati, OH 45221, 1979.

Roper, Arnold. *AVT Machine Transcription*, Media Systems Corporation, 757 Third Avenue, New York, NY 10017.

Uris, Auren, *Dictation Book*, IWP, 1015 North York Road, Willow Grove, PA 19090.

PARTIAL LISTING OF HUMAN RELATIONS TEXTBOOKS

Chapman, Elwood. *Your Attitude is Showing*. SRA, Palo Alto, CA 94304.

Ellenson, Ann. *Human Relations*. Prentice-Hall, Englewood Cliffs, NJ 07632.

PARTIAL LISTING OF REFERENCE MATERIALS

Clark and Clark. *How 3, A Handbook for Office Workers*. Kent Publishing Company, 20 Park Plaza, Boston, MA 02116.

House and Sigler. *Reference Manual for Office Personnel*. South-Western Publishing Company, 5101 Madison Road, Cincinnati, OH 45227.

Kutie, Rita and Huffman, Virginia. *Wiley Office Handbook*. John Wiley and Sons, Inc., 605 Third Avenue, New York, NY 10158.

Sabin, William. *Gregg Reference Manual*, Gregg/McGraw Hill, New York, NY 10020.

PARTIAL LISTING OF KEYBOARDING TEXTBOOKS

Burton, Sharon and Ralph, Holloway. *Keyboarding for the Information Processor*, Bobbs Merrill, 4300 West 62nd St., Indianapolis, IN 46206, 1984.

Bux and Clark, *Data Entry Activities for the Microcomputer*, South-Western Publishing Company, 5101 Madison Road, Cincinnati, OH 45221, 1983.

Chiri/Kutsko/Stoddard. *Houghton Mifflin Typewriting*, Houghton Mifflin, One Beacon Street, Boston, MA 02108, 1984.

Crawford, Erickson, Beaumont, Robinson and Ownby. *Basic Keyboarding and Typewriting Applications*, South-Western Publishing Company, 1982. ($6.42)

Hanson, Robert N. and D. Sue Rigby. *Keyboarding*. Gregg/McGraw Hill, New York, NY 10020, 1980 ($6.95).

LaBarre, James, William Mitchell and Kaye Mach. *Keyboarding for Information Processors and Microcomputers*, SRA, 1540 Page Mill Road, Palo Alto, CA 94304, 1982.

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Lloyd, Rowe, Winger, *Typing 75 Keyboard Course*, McGraw-Hill, New York, NY 10020.

McLean, Gary N., Davison, Leslie J. and Santos, Otto, Jr. *Keyboarding for Everyone*. Anaheim Publishing Co., 2632 Saturn St., Brea, CA 92621, 1984.

Rosen, Arnold & William H. Hubbard. *Word Processing Keyboarding Applications and Exercises*, Wiley Publishing Co., 605 Third Avenue, New York, NY 10158, 1981 ($4.95).

The Electronic Keyboard, Minnesota Curriculum Service, 3554 White Bear Ave., White Bear Lake, MN 55110, 1984. A guide to teaching elementary keyboarding.

Yacht, Carol. *Basic Typing: A Brief Course*, Bobbs-Merrill, 4300 W. 62nd Street, Indianapolis, IN 46206, 1979 ($13.95).

PARTIAL LISTING OF KEYBOARDING SOFTWARE

ACCU Touch, (Software for Keyboard Training), Keyboard Productivity, Inc., Marina Del Ray, CA, 1983.

Burton, Sharon and Holloway, Ralph, *Keyboarding for the Information Processor*, Bobbs-Merrill Publishing Co., 4300 W. 62nd St., Indianapolis, IN 46206.

CA-Typing Strategy and Letter Man, Behavioral Engineering, Scotts Valley, CA.

Chiri/Kutsko/Stoddard, *Keystrokes: For Information Entry*, Houghton Mifflin, One Beacon Street, Boston, MA, 1983.

Cooks Typing Tutor, Cook's Computer Company, 1905 Bailey Drive, Marshalltown, IA 50518 (APPLE)

Dowis, Anne, *Keyboarding*, Educational Activities, Inc., Fort Lauderdale, FL, 1983.

Gregg Keyboarding for Information Processing, Gregg/McGraw-Hill, 13955 Manchester Road, Manchester, MO 63011 (APPLE/TRS-80)

Hi-Res Mastertype, Lightning Software, P.O. Box 11725, Palc, Alto, CA 94296, 1981 (APPLE)

Jackson, Schroeder, and Hargis. *Alphabetic Keyboarding, Basic Information Keyboarding Skills*, South-Western Publishing Co., 5101 Madison Road 45227, Cincinnati, OH, 1982.

Jackson, Schroeder, and Hargis. *Microcomputer Keyboarding*, South-Western Publishing Co., 355 Conde Street, West Chicago. IL 60183, 1982 (APPLE/TRS-80).

Keyboarding, (5 and up), (Master Type), Woodcliff Lake, NJ: K-12 Micro Media, 1983.

Keyboarding for Information Processing--Plato, (Control Data), K-12 Micro Media, Woodcliff Lake, NJ, 1983.

Learn to Type on Your Computer, Dictation Disc Co., 240 Madison Ave., New York, NY, 1983.

**Master Type*, Lightning Software, Palo Alto, CA, 1981.

MECC Business Volume 1 includes a program on the disk called TYPING, which gives users practice in improving their typing speed (APPLE)

Microsoft Typing Tutor, Microsoft Consumer Products, 10800 N.E. Eight, Suite 507, Bellevue, WA 98004 (APPLE/TRS-80)

Progressive Touch Typing Tutor, Progressive Software, Suite 323, Blue Bell West, Blue Bell, PA 19422 (APPLE)

Timed Writings on Computer Diskette, Dictation Disc Co., New York, NY 1983.

Typing. Teck Associates, White Bear Lake, MN.

Type Master, Fullmer Associates, San Jose, CA.

Typing Tutor III, Kyriya Systems, Inc., Simon & Schuster.

**Type Attack*, Sirius Software, Computer Skill Builders, Tucson, AZ, 1982.

Typing Teacher, Brian Box, New York, NY.

*Software Best Sellers, *Modern Office Technology*, 1983.

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PARTIAL LISTING OF COMPUTER LITERACY SOFTWARE

Control Data
Computer Literacy: Introduction: History, Uses, Issues. (PLATO Educaitonal Software) $45. One or more disks, Support Manual; Apple II +, Atari 800, TI-99/4A. For upper elementary and secondary school students.

Encyclopaedia Britannica Educational Corp.
Understanding Computers; $266. Four disks, teacher's manual, student workbook; Apple II+, TRS-80 Model III.

Follett Library Book Co.
Introduction to Microcomputers; $47.49. Disk or tape, reproducible activity sheets, teacher's resource guide; Apple, PET, TRS-80. For Grades 3-6.

SRA, Inc.
Micro Discovery; $190. Two diskettes, twenty student workbooks, instructor's guide; Apple II w/Applesoft or Apple II+, TRS-80 Model III. Six-week course for Grades 4-8.

Computer Discovery; $200. One or two diskettes of ten cassettes, twenty student workbooks, instructor's guide; Apple II w/Applesoft or Apple II+, TRS-80 Model III, Atari 800, TI99/4 or TI99/4A, PET 4032.

SVE, Inc.
Computer Awareness; $185. Four sound filmstrips, worksheets, and two disks for the Apple or TRS-80. Four grade 7 and up.

PARTIAL LISTING OF COMPUTER LITERACY TEXTBOOKS

Atkinson, June St. Clair. *Help With Computer Literacy.* Houghton Mifflin Company, 1900 S. Batavia Ave., Geneva, Ill. 60134, 1983.

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Shelly, Gary B. and Thomas J. Cashman. *Computer Fundamentals for an Information Age,* Anaheim Publishing Co., 2632 Saturn St., Brea, CA 92621, 1984.

NEWSLETTERS

To keep up to date with the latest changes in vendor's equipment and office procedures, numerous office systems newsletters are published. Choose carefully as many are extremely expensive.

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The Information Management Newsletter, Information Management Press, P.O. Box 19166, Washington, D.C. 20036. Monthly.

The Altertext Report, Altertext Corporation, 211 Congress Street, Suite 400, Boston, MA 02110, $88. Monthly.

Office Systems Report, 8C08 Halsey, Lenexa, KS 66215. Published six times a year. $6. Dr. Nancy Groneman, Editor.

The Seybold Report on Office Systems, Seybold Publications, Inc., P.O. Box 644, Media, PA 19063, $150 less 40% discount. Monthly. Patricia Seybold, Editor.

The Seybold Report on Professional Computing, Seybold Publications, Inc., Box 644, Media, PA 19063, $96 less discount. Monthly. Patricia Seybold, Editor.

Advanced Office Concepts, Advanced Office Concepts, One Bala Plaza, Bala Cynwyd, PA 19004, $95. Monthly. Amy Wohl, Editor.

MIS Week, MIS Week, Circulation Dept., P.O. Box 1003, Manasquan, NJ 08736. A weekly newspaper. $35.

Word Processing News (A Research Newsletter), 912 Via Tournasol, Aptos, CA 95003. Published six times a year by Paula Cecil, author of several WP texts. Free.

PUBLICATIONS FOR THE AREAS OFFICE AUTOMATION/TELECOMMUNICATION INFORMATION SYSTEMS AND MANAGEMENT

BYTE, (Small Systems Journal), McGraw-Hill Publishing Co., Inc., P.O. Box 590, Martinsville, NJ 08836. Published monthly, subscription, $21 U.S., $23 Canada.

COMPUTER PRODUCTS, Gordon Publications, P.O. Box 1952, Dover, NJ 07801-0952. Published bimonthly. Free to qualified individuals otherwise $6. U.S. and Canada.

COMPUTERWORLD, Rt. 880, 375 Cochituate Road, Framingham, MA 01701-9985. Published weekly, $44 U.S., $110 Canada.

CONCEPTS, Wang Laboratories, Inc., One Industrial Avenue, Lowell, MA 01851. Published Quarterly. Free to Wang WP/DP equipment users, otherwise $16 annual non-membership subscription.

CREATIVE COMPUTING, P.O. Box 789-M, Morristown, NJ 07960, Published monthly, $20 per year subscription fee.

DATAMATION, Technical Publishing Company, 875 third Avenue, New York, NY 10022. Published monthly, free to qualified buyers, otherwise subscription $42 U.S.; $60 Canada.

INFORMATION MANAGEMENT, 101 Crossways Park West, Woodbury, NY 11797. Published monthly, free to qualified subscribers, otherwise $10 U.S., $24 Canada.

INFORMATION PROCESSING, IBM, Information Systems Group, 1132 Westchester Avenue, White Plains, NY 10604. Published by IBM, free to customers served by the National Accounts Division of the IBM IS group.

INFOSYSTEMS, Hitchcock Publishing Co., P.O. Box 3007, Wheaton, IL 60189-9933. Published monthly--U.S. readers ask for a free subscription, otherwise subscription rate is $55 U.S.; $65 Canada.

INFOWORLD, Popular Computing, Inc., 375 Cochituate Road, Box 637, Framingham, MA 01701-9987. Published bi-weekly, $25 U.S.; $65 Canada.

JOURNAL OF MICROGRAPHICS, Association for Information and Image Management, 8719 Colesville Road, Silver Spring, MD 20910. Published monthly, free to members of NMA, otherwise $55 per year (U.S.).

JOURNAL OF SYSTEMS MANAGEMENT, 24587 Bagley Rd., Cleveland, OH 44183. Published monthly, subscription $17 U.S., $20 Canada, and $8.75 members.

MANAGEMENT WORLD, AMS Building 2060 Maryland Road, Willow Grove, PA 19090. Published monthly $18 per year to non-members of AMS. (U.S. and Canada)

MICROCOMPUTING, Published by Wayne Green, Inc., 80 Pine Street, Peterborough, NH 03458. Published monthly, $25 a year.

MICROFILM TECHNIQUES, 250 Fulton Avenue, Hempstead, NY 11550, bimonthly, free.

MINI-MICRO SYSTEMS, Cahners Publishing Co., 221 Columbus Avenue, Boston, MA 02116. Published monthly, free to qualified subscribers, otherwise $30 subscription fee.

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MODERN OFFICE TECHNOLOGY, P.O. Box 95795, Cleveland, OH 44101. Published monthly. Ask for a free subscription, otherwise subscription is $30, U.S., $50.

THE OFFICE, Office Publications, Inc., Attention: Circulation Dept., P.O. Box 1231, Stamford, CT 06904. Monthly publication, free to qualified subscribers, otherwise $30 U.S., $60 Canada.

OFFICE ADMINISTRATION AND AUTOMATION, Geyer-McAllister Publications, Inc., P.O. Box 1129, Dover, NJ 07801. Published monthly, subscription $19 per year (U.S. and Canada).

THE SECRETARY, published by the Professional Secretaries International, 2440 Pershing Road, Crown Center G10, Kansas City, MO 64108-2560. Published nine times a year, $12 subscription, U.S. and Canada.

SOFTWARE AGE, 2211 Fordem Avenue, Madison, WI 53701. Monthly publication, free.

SOFTWARE NEWS, Technical Publishing Co., 875 Third Avenue, New York, NY 10022. Published monthly, free to qualified individuals otherwise $25 U.S. and Canada.

TELECOMMUNICATIONS, 610 Washington Street, Dedham, MA 02026. Published monthly, free to qualified individuals, otherwise $36 U.S.; $48 Canada.

TODAY'S OFFICE, 645 Stewart Avenue, Garden City, NY 11530. Published monthly. Free to qualified officials; otherwise subscription is $30 U.S. and $35 Canada.

TYPEWORLD, Blum Publications, 15 Oakridge Circle, Wilmington, MA 01867. Published tri-weekly, free to qualified individuals otherwise $20 subscription fee U.S. and Canada.

VIEWPOINT, IBM Corporation, General Systems Division, P.O. Box 2068, Atlanta, GA 30055. Published bimonthly.

THE WORD, Office Technology Management Association, P.O. Box 52555, Milwaukee, WI 53202. Published monthly. Subscription $15 per year to non-members of the OTMA.

WORDS, Association for Information Systems Professionals, 1015 North York Road, Willow Grove, PA 19090. Published bimonthly. Subscription $18 per year to non-members of AISP in U.S. and Canada.

PARTIAL LISTING OF EDUCATIONAL COMPUTING JOURNALS

Classroom Computer Learning
19 Davis Drive
Belmont, CA 94002

Educational Computer
3199 De La Cruz Blvd.
Santa Clara, CA 95051

Electronic Learning
730 Broadway
New York, NY 10003

Teaching and Computers
730 Broadway
New York, NY 10003

The Computing Teacher
University of Oregon
1787 Agate Street
Eugene, OR 97403

PARTIAL LISTING BUSINESS EDUCATION SOFTWARE

Alphabetic Indexing Rules - Application by Computer, South-Western Publishing Co., $59.50.

Automated Accounting for the Microcomputer, South-Western Publishing Co., $59.50.

Baron: The Real Estate Market Simulation, Blue Chip Software, $59.95.

Business: Volume 3 - Accounting, Minnesota Educational Computing Consortium (MECC).

Conglomerates Collide, Career Aids, Inc., $39.95.

Corplan (management decision simulation), Radio Shack/Tandy Corporation, $49.95.

Management Skills Series I: Being Boss, Bantex, Inc. (Radio Shack), $89.95.

Microcomputer Activities for Office Procedures, South-Western Publishing Co., $59.50.

Microcomputer-Oriented Accounting: A CAI Approach, South-Western Publishing Co., $59.50.

Millionaire: The Stock Market Simulation, Blue Chip Software, $59.95.

Palmetto Insurance Company - A Computerized Office Job Simulation, South-Western Publishing Co., $59.50.

Stock Markets, Career Aids, Inc., 8950 Lurline Ave., Chatsworth, CA 91311, $29.95.

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The Computerized Billing Clerk - Acme Electric Company, South-Western Publishing Co.

The Market Place (business simulations), MECC, $36.

Tycoon: The Commodity Market Simulation, Blue Chip Software, Inc., $59.95.

Video Gallery Sales and Service - An Automated Accounting Simulation, South-Western Publishing Co., $59.50.

APPENDIX A

The following research was compiled by Juanita Parker, a business teacher at Ness City High School, Ness City, Kansas:

KEYBOARDING

Our society has definitely arrived at the point where "touch" keyboarding skill has become a basic need at all levels of employment (Hanson and Rigby, 1983). This skill must be added to our business education curriculum, and we must advise all students of the need and importance of this skill.

Several types of keyboarding materials have become available. A careful review of these new materials reveals a number of disappointing trends, including: (1) modified typing books renamed and newly bound, (2) diskettes added to old typing books; (3) revised electronic calculator manuals, and (4) new materials which have had little, if any, field testing (Alexander and Dickey-Olson, 1983).

Because of these factors, we need to study the following aspects to determine the place of keyboarding in our curriculum: definition of keyboarding, objectives, course content, grading standards, length of the course, grade level, selection of instructor, equipment, methods of instruction, and materials available.

Definition

There are basically two definitions of keyboarding. Alexander and Dickey-Olson (1983) provide these two general definitions: (1) The keyboarding course should teach only the "touch" system of striking the keys, both alphanumeric keys and ten-key numerical pad, with correspondence styles omitted. This type of course also may include computer concepts and vocabulary. Accuracy is stressed. (2) Keyboarding is really a typing class with a new name. The same course content as a basic typing course is taught, and the students are allowed to backspace and strikeover their errors. Advanced classes are taught on word processors and microcomputers. Letter styles, memorandums, and tabulation are included because of the basic typewriting class philosophy.

The first definition is the logical one for a course in keyboarding, because the basic purpose for a keyboarding class is to teach the "touch" system of manipulating a keyboard and ten-key numerical pad with proficiency. We also need to remember that keyboarding is really a method of communicating information or obtaining information (Beaumont, 1981).

Objectives

The objectives of a course in keyboarding will be determined by the definition applied. To meet the definition that keyboarding basically teaches the keyboard and accurate keystroking, the students should be able to perform the following objectives:

Demonstrate the correct "touch" system techniques for operating alphanumeric keys.

Demonstrate the correct "touch" technique to be used on a ten-key numerical pad.

Demonstrate a straight-copy speed of 30 words-per-minute and an accuracy level of not more than two errors-per-minute.

Demonstrate the ability to work from typed and rough-draft material.

Demonstrate the ability to follow oral and written directions.

Demonstrate the ability to backspace and correct errors.

Transfer the "touch" system of keyboarding skills for most of the electronic automatic repetitive keyboards currently on the market. (Dickey-Olson, 1981)

If the teacher feels other objectives are desirable, these can be added; or the suggested objectives can be revised and updated if they are found to be unsatisfactory.

Course Content

Since keyboarding should be for persons who have no keyboarding skill, the class will need to provide instruction to develop a "touch" system of keyboarding. In an article entitled "Computer Literacy," Wood states, "It is totally inefficient for students to key data into a microcomputer, with its power and speed, using hunt-and-peck keying (Wood, 1983)." During the learning of the "touch" system of operation, the student should also be introduced to some of the vocabulary and concepts used in keyboarding operations (Hanson & Rigby, 1983). In addition to touch keyboarding skill, the class needs to include instruction in the touch operation of a ten-key numerical pad.

Skill-building practice on realistic keyboarding tasks, such as inputting tabular material and keying computer programs, should be included (Hanson & Rigby, 1983). Attention can be directed to the use of all capital letters with numbers for programming.

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Length of Course

Hanson and Rigby (1983) feel that the keyboarding course can be relatively short: eight or nine weeks, with instructional hours ranging from 25 to 40.

Dickey-Olson (1981) indicates that the keyboarding class can be as short as five weeks, but she recommends that a nine-week period would be better.

Grading Standards

As indicated earlier, accuracy is one of the most important factors in keyboarding. Therefore, this would be an important consideration in assigning grades. Dickey-Olson (1981) recommends an accuracy level of not more than two errors-per-minute. For students trying to achieve an employable skill, this error limit is obviously too high.

The speed level achieved also needs to be evaluated. Robinson and Johnson (1982) recommend a minimum rate of 25 to 30 words a minute, accompanied with appropriate control.

In addition to developing standards for speed and accuracy, homework assignments should be evaluated based upon completion, reading and following directions, and proofreading. It is recommended that zero (0) uncorrected errors be assigned a grade of A; one (1) uncorrected error, B; two (2) uncorrected errors, C; and three (3) uncorrected errors, D. Since we are working with keyboarding related to microcomputers, most any kind of error could be considered correctable, especially if using any of the "spell" checker programs. The emphasis here is being placed on the ability to proofread carefully and produce a copy which is 100 percent accurate.

Elementary Instruction

First graders and kindergartners are "hunting" and "pecking" their way through various microcomputer programs. Likewise, second through sixth graders have also joined the ranks of "hunters" and "peckers" (Rauch and Yanke, 1982).

Because of this, should keyboarding be taught at the kindergarten level and/or lower elementary grades? One of the first steps in deciding whether or not to develop an elementary keyboarding curriculum would be to determine the present involvement of elementary schools, teachers, and students with microcomputers (Rauch and Yanke, 1982). Keyboard instruction is important for the elementary students and it is also vital for business education, which has as its foundation good keyboarding habits (Stewart and Jones, 1983). The general consensus seems to be that kindergarten is too young to begin keyboarding. Kansas teachers who have taught it at this level feel that the attention span is not long enough and there is a lack of manual dexterity. Most schools are starting keyboarding instruction at the fifth grade level.

We need to remember that keyboarding habits are developed when students first start operating the keyboard. The inadequate habits and hunt-and-peck techniques are not suitable when students later decide to enter a vocational office program (Stewart and Jones, 1983).

The grade level at which keyboarding should be initiated will be determined to a great extent by the grade level at which actual keyboarding on the microcomputer is first used. We need to ask ourselves, "Are we teaching what is relevant – when it's relevant?" As business educators, we are being challenged to study the microcomputer curriculum and develop fundamental keyboarding skills at the appropriate level.

Selection of Instructor

When choosing an instructor for the keyboarding class, the question of "Who?" may not be so important as the question, "Is the teacher competent?" The only teachers certified to teach typing and keyboarding are business education majors and minors. In K-12 instruction in Kansas, teachers cannot teach classes for which they are not certified.

Keyboarding requires development of a motor skill; therefore, the teacher must have knowledge of the psychology and philosophy of teaching a motor skill, which should be a prerequisite for teaching keyboarding. In order to have business teachers certified for any level of keyboarding instruction, it might be necessary to recertify teachers for kindergarten through twelfth grade or require nontyping teachers to take courses in methods of teaching keyboarding skills (Alexander and Dickey-Olson, 1983).

The important thing to remember when assigning the instructor is competency and expertise. The teacher must develop fundamental keyboarding skills which will be adaptable and transferable should that student decide to continue with vocational instruction in the basic typewriting and/or secretarial areas.

Equipment

Since we are dealing with keyboarding techniques applicable to a microcomputer keyboard, it would be ideal for the medium of instruction to be a microcomputer keyboard. Teaching touch keyboarding on the computer offers several advantages:

1. It prepares students for the electronic office.

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2. It virtually eliminates the tedious task of grading papers, thereby providing the teacher with more time to review student progress and assess needs.
3. Greater consistency and accuracy in grading will be attained.
4. From the viewpoint of both teacher and the student, it makes learning easy and pleasurable. (Sunkel and Cooper, 1982).

It will be impossible for some schools to have computer terminals available for all keyboarding instruction. Electric typewriters and electronic typewriters can also be used to teach keyboarding skills. The correcting electric would be more realistic because of the "backspace to correct" feature. Manual typewriters should not be used.

The use of the regular typewriter keyboard provides a medium of instruction on which a student can gain the skill of touch keyboarding which can be transferred easily to any of the more sophisticated machines (Dickey-Olson, 1981).

Method of Instruction

There are at least three main approaches to teaching a keyboarding class:

1. Traditional -- the instructor guides the learning and pacing of students.
2. Individualized -- visual learning/practice is supplemented by audio/learning practice allowing the student to progress at his/her own rate.
3. Computer-Assisted Instruction (CAI) -- a self-tutorial style which needs to be monitored for the steady progress of the students (Alexander and Dickey- Olson, 1983).

Materials Available

There are a variety of materials available for helping the instructor with the actual teaching of the keyboarding class.

Textbooks are available from most of the business education related companies. Some microcomputer companies have manuals for their machines, and several sources have software programs for teaching keyboarding (Alexander and Dickey-Olson, 1983). An advantage of a software program is that the student can select from the menu the specific activity he/she wishes to use.

A determining factor in choosing the materials for instruction will be the equipment available for the class and the grade level at which it is to be taught. Software would not be useful if there were a limited number of computers available for instructional purposes, unless it could be integrated as a remedial or reinforcement tool.

Summary

Individuals at every level of business -- from clerks to executives -- are required to use keyboards on electric terminals to enter and retrieve information (Robinson and Johnson, 1982).

More potential employers are asking, "Can you keyboard?" Keyboarding is becoming an increasingly important factor in more than just clerical professions.

Too many times keyboarding becomes the missing link in efficiency in many facets of education and of business. We, as business educators, must study the implications of keyboarding in regard to efficient operation of electronic terminals used for a variety of purposes. Are we adequately meeting the needs of students if we are not concerned with the habits they develop while using the microcomputer?

We should mandate a keyboarding course as a prerequisite for all computer classes. By doing so, we could provide the necessary computer-related keyboarding skills.

Keyboarding classes need to be initiated and provide basic skills through optimum instruction in a minimum time period. This needs to be instigated prior to extensive hands-on experience at the microcomputer. Some computer functions and uses require very little keyboard interaction. Business educators many times will be giving exposure without requiring keying proficiency.

Keyboarding has broad implications ... As business educators, we must capitalize on what we have done well for decades -- prepare students to effectively input data on a keyboard (Blue, 1983).

To teach a keyboarding class effectively, the teacher must define the term, develop objectives, select course content, develop grading standards, examine the curriculum to determine the grade level, be competent and certified in teaching a motor skill, and have adequate equipment and instructional materials. In addition, the teacher must view these students as keyboard operators rather than as secretarial students.

Through the development of a keyboarding class in our school curriculum, required of all students before computer literacy classes, we can change keyboarding from a missing link to a vital link in order to provide the greatest amount of efficiency.

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Gangel, David M. "Let's All Teach Keyboarding." *Business Exchange* (April, 1983) pp. 24-25.

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Robinson, Jerry W., and Gary L. Johnson. "Learning Microcomputer Keyboarding." *The Balance Sheet* (March, 1982) pp. 228-231.

Stewart, Jane, and Buford W. Jones. "Keyboarding Instruction: Elementary School Options," *Business Education Forum* (April, 1983) pp. 11-12.

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Wood, Merle. "Computer Literacy." *The Balance Sheet* (March-April, 1983) pp. 231-233.

Yacht, Carol. "Developing Skills in Keyboarding and Proofreading Required for Word Processing," *Business Education Forum* (March, 1983) pp. 13-14.

KANSAS KEYBOARDING CERTIFICATION INFORMATION

Certification to Teach Keyboarding in the Middle School

Most business teachers in Kansas are certified to teach business subjects, including keyboarding in grades 7-12. You may be eligible for a middle school certificate (grades 5-6) if you can meet the following criteria:

1. Teaching experience in grade 9 or below. Student teaching in these areas is acceptable. Substitute teaching is not.
2. Course work completed in both child psychology and adolescent psychology.
3. A minimum of fifteen semester hours in business subjects.
4. A recommendation for the middle school endorsement by a state-approved teacher education institution.

If you are certified K-12 in a subject area other than business, you will not be eligible to teach keyboarding unless you have an 1800 endorsement, which is the elementary self-contained classroom endorsement.

If you have determined you are not certified to teach keyboarding, you do have other options:

1. Recommend the instructional materials and methods for the keyboarding course which is offered in the district and work closely with the instructor who will be teaching the course.
2. Teach the keyboarding class after school or in the summer. The course could not be offered for credit nor could it be a part of the school curriculum. It is unlawful for your Board of Education to pay you if you are not certified to teach a subject in a particular grade level. In some districts, the PTA or other parent groups are paying the instructor an hourly salary.

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ELEMENTARY KEYBOARDING PILOT PROJECT

The following keyboarding material was compiled by Marilyn Meyer, Shawnee Mission School District, on an elementary keyboarding pilot conducted in 1982-83.

No. of Hours	*Grade Class No. of Weeks*	*Days*	*Time*	*Level*	*Size*
16	2 Weeks (Summer)	M-T-W-Th.	8:00 a.m. 10:00 a.m.	1-6	15
10	4 Weeks (Winter)	W-Th.	4:00 p.m. 5:15 p.m.	3-4	15
10	4 Weeks (Winter)	W-Th.	4:00 p.m. 5:15 p.m.	5,6,7	16
10	2 Weeks (Summer)	M-T-W Th.-F	1:00 p.m. 2:00 p.m.	4-8	30
10	2 Weeks (Summer)	M-T-F Th.-F	2:00 p.m. 3:00 p.m.	4-8	30
9	6 Weeks (Fall)	W	4:00 p.m. 5:30 p.m.	3-6	15
12	6 Weeks (Fall/Spring)	M-W	3:30 p.m.	Adult	1

Materials Used: *Keyboarding for Information Processing* - Hanson & Rigley
Mastertype - Bruce Zweig

Objective: The student will become familiar with basic keyboarding by inputting alphabetic and symbolic information on a keyboard accurately.

Some suggestions and ideas from instructors of our keyboarding classes:

1. Use laboratory equipped with electric typewriters.
2. Students need electric typewriters to practice keyboarding skills.
3. Students' enthusiasm for learning was greater when the combination of typewriters and computers was used in the classroom.
4. About 1/3 of the students owned a computer; 1/4 had plans to purchase one soon.
5. Attendance excellent.
6. Most students learned the bottom three banks of the keyboard.
7. Students tire easily; needed short time to stretch/exercise.
8. Teacher must be flexible; really *like* children.
9. Assignments needed to be scaled down.
10. Most important that the students feel good about taking the class and have rising expectations for themselves to continue to become more proficient in the high tech world in which they live.

ELEMENTARY KEYBOARDING

The following material is summarized from a presentation at the 1984 NBEA Convention by Patricia Hundley, Orno Senior High School, Long Lake, Minnesota.

Long Lake has had an elementary keyboarding program for the last two years. Elementary keyboarding is a required course for all new fifth graders. Ms. Headley is presently teaching a six-week, 15-hour program which meets one-half hour a day. She feels that 20 hours in length would be better, but no more than one-half hour a day. She has the students work 15 minutes on the computer and then they switch for the remaining 15 minutes on the typewriter. She teaches 30 students at a time.

Her goal is to have the students become familiar with the keyboard and the alpha numeric keys. She stated she could not get very concerned about technique. She never measured speed and used simple sentences that the students already have in their vocabulary. She did not grade the students, but gave each student a certificate. She also sent a letter home to the parents indicating that keyboarding was not replacing the typewriting program at the high school.

Ms. Headley has trained over 160 teachers in Minnesota on methods of teaching elementary students, and she had some really good ideas about teaching children. She indicated she uses all-verbal teaching, and that children love to speak along with the drills. She always does the drill more than once because the students want to take a paper home to put up

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on their refrigerator. She does such things as finding out whether the students know the difference between their left hand or right hand, and she uses such terms as "curve your fingers like scratching a cat's back." She originally sold elementary keyboarding as a language arts skill to the elementary school. Ms. Headley helped develop an elementary keyboarding curriculum guide entitled *The Electronic Keyboard* at a cost of $5 available from the Minnesota Curriculum Service, 3554 White Bear Avenue, White Bear Lake, Minnesota 55110, 612-770-3943, item #506.

Garden City, Kansas

In 1984, Garden City USD 457 initiated an elementary keyboarding program. After Summer 1984, over 200 students will have completed keyboarding instruction. For further information, contact Maureen Hooker, Garden City High School, 1412 North Main, Garden City, Kansas 67846, 316-276-3207.

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APPENDIX B

COMPUTER LITERACY

The general computer literacy of our entire population will have to be raised. By the end of this century it will be difficult to function in a developed country without being able to use a computer terminal. This will be a two-part effort: we have to provide computer literacy education to every current and future student in our educational institutions at every level, *and* we will have to provide a kind of "retraining" in computer literacy to every worker now in the workforce. NOTE: Being educated in computer literacy does *not* mean teaching everyone how to program. That effort would be analagous to requiring that every student driver learn to repair internal combustion engines. It does mean teaching everyone to *use* computers and computer software at a level appropriate to their functioning in the society. We should not be graduating any more high school seniors who are not minimally computer literate. Also, we need to provide early stages of training and career counseling for students who will become the analysts, designers, and managers of the automated office.

The California Department of Education (1984) defines a computer literate person as having one or more of the following characteristics:

- awareness of the computer, its capabilities and limitations, and the techniques associated with it
- can tell the computer how to do the things he/she wants it to do
- has a functional knowledge of computers and their effects on society
- has an understanding of computers that enables him/her to evaluate computer applications as well as do things with them
- has a knowledge about computers that the lay person needs to function effectively
- knows how to use a computer, including at least one applications program
- knows how to access information in the computer
- knows how to manage information in the computer
- knows how to add information to the computer
- is comfortable with the computer
- has respect for the computer

Computer literacy can exist at two different levels:

1. the *awareness* level, where the student is introduced to the computer and its uses, and has some actual hands-on time.
2. the *operational* level, where the student uses application software, does simple programming, and has knowledge of the systems development process.

The following course outline may be beneficial when developing a computer literacy course.

CONTENT OUTLINE

1. Evolution of Computers
2. Computers In Society
    a. Government (social security)
    b. Business (credit cards, utility billing, on-line data base)
    c. Science (weather prediction, industry, process control)
    d. Industry (process control)
    e. Medicine (patient monitoring)
    f. Law Enforcement (telecommunications)
3. Computer Applications
    a. Applications of specific interest to students
    b. Possible uses of computers
4. The Processing Cycle
    a. Hardware
    b. Software
    c. Data
    d. Procedures
    e. People

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5. Input Devices
    a. Key-to-disk input
    b. Online input
    c. Magnetic tape drive
    d. Magnetic disk drive
    e. Floppy disk reader
    f. Pattern recognition devices
    g. Electronic wand
    h. Data transmission lines
    i. Terminal
    j. Image processors
6. Processing (CPU-Central Processing Unit)
    a. Control (program execution)
    b. Arithmetic/Logic (computes, compares)
    c. Storage (immediate results, and memory)
7. Output Devices
    a. Printers
    b. Magnetic output devices
    c. Visual display (CRT)
    d. Plotter (graphs charts, tables)
    e. Data transmission lines
8. Operations In Data Processing
    a. Recording
    b. Converting
    c. Sorting
    d. Calculating
    e. Storing
    f. Reporting
    g. Communication
9. Routine Office-Support Systems
    a. Payroll
    b. Billing
    c. Inventory control
    d. Sales analysis
    e. General ledger
    f. Order entry
10. Systems Design
11. Computer Ethics
    a. Invasion of privacy
    b. Dishonesty and fraud
12. Job Titles, Duties, And Educational Requirements
    a. Data preparation clerks
    b. Computer and console operators
        1. Supervisor, computer operation
        2. Computer operator
    c. Peripheral equipment operators
        1. Computer peripheral equipment operator
        2. High speed printer operator
    d. Keypunch and coding equipment operators
        1. Data entry
        2. Sorting machine operator
    e. Programmer
        1. Applications programmer
        2. Systems programmer
    f. Systems analyst
    g. Support specialist
    h. Data base analyst
    i. Documentation specialist
    j. Telecommunications
13. Growth of Computer Industry
    a. Number of computers
    b. Number of users
    c. Microcomputer growth
    d. Trend to distributive processing

COMPETENCIES TO BE DEVELOPED

The ability to demonstrate a knowledge of:

1. The similarities and differences between mechanical, electromechanical, and electronic data processing systems
2. Selection of a combination of computing components to solve a problem
3. Computer capabilities and limitations
4. Common business applications of the computer and microprocessor technology
5. Career opportunities in computer-related occupations

CONCEPTS TO BE STRESSED

- There is a need and demand for quick information
- Computers only work with quantitative data
- Computers are machines which must be directed
- Interacting with computers demand accuracy

AFFECTIVE DOMAIN EMPHASES

- Appreciate developing technology
- Appreciate the need for computer literacy
- Value a computer's capability to process data and improve the decision-making process
- Recognize the superiority of man over machines

COGNITIVE LEARNINGS

- Types of data processing
- Computer components
- Data processing terminology
- Computer capabilities
- Computer limitations
- Computer applications
- Computer-related careers
- Computer system configurations

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The California State Department of Education has also developed computer literacy outlines, which are available from the Business Education Specialist, Kansas State Department of Education, 120 East 10th, Topeka, Kansas 66612.

COMPUTER LITERACY REFERENCES

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APPENDIX C

DISPLAYWRITER

Checkpoint Sheet

_____ Checkpoint 1 (34 points). Topics 1, 2, 3, 4, and 5.

Topic 2
(1) _____ Display module
(1) _____ Diskette unit
(1) _____ Keyboard module
(1) _____ Printer
(1) _____ Electronics Module
(1) _____ Program diskette
(1) _____ Demonstrate loading diskette

Topic 3
(1) _____ Cursor
(1) _____ Menu
(1) _____ Prompt line
(2) _____ Correcting errors on prompt line (backspace or Code Cancel)
(1) _____ Messages
(1) _____ Auto carrier return
(1) _____ Storing document on diskette (press End)

Topic 4
(3) _____ Prepare the printer (turn on power, check lights, check printwheel and ribbon)
(5) _____ Printing a document (Request key, document name, diskette name, enter, load paper, start printer)

Topic 5
(1) _____ Demonstrate revise document (Finance)
(5) _____ Explain each item of status line
(4) _____ Demonstrate cursor movements

_____ Checkpoint 2 (33 points). Topics 6, 7, 8, 9, 10, and 11.

Topic 6
Explain or demonstrate
(6) _____ Steps to create a letter
(1) _____ choose create document
(1) _____ type document name
(1) _____ type diskette name
(1) _____ if no document comment, press Enter
(1) _____ type letter
(1) _____ end
(1) _____ Underscore one word at a time
(2) _____ Continuously underscore a series of words (Code Begin Und and Code End Und)

Topic 7
Explain or demonstrate
(2) _____ Change the format for the majority of a document (Before typing)
(2) _____ Center a heading on a page
(2) _____ Change the format for part of a document after you have begun to type
(2) _____ Return to the starting format after the format has been changed

Topic 8
Explain or demonstrate
(2) _____ Set up a menu to revise a letter (Smith letter)
(1) _____ Make deletions
(1) _____ Make additions

Topic 9
Explain or demonstrate
(1) _____ Delete a center heading
(1) _____ Delete an extra carrier return

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(1) _____ Use Find
(2) _____ Use Move (paragraph, sentence, word, or character)
(2) _____ Locate and view Format changes

Topic 10
Explain or demonstrate
(1) _____ Display the index of diskette contents
(1) _____ Move through the index to display more than 15 entries

Topic 11
Explain or demonstrate
(1) _____ Load program for work diskette tasks
(2) _____ Duplicate Master diskette to Train diskette

_____ Checkpoint 3 (41 points). Topics 2, 3, 4, 7, Copying inside address, and hyphenation.

Topic 2 – Creating an Envelope with a Letter
Explain or demonstrate
(5) _____ Create an envelope for letter
(1) _____ Page End
(3) _____ Change Format (paper size, first typing line, left margin)
(1) _____ End
(5) _____ Copy inside address
- (1) _____ Cursor to first character
- (1) _____ Code + Copy
- (1) _____ Go to end of letter
- (1) _____ Page End
- (1) _____ Change Format

Topic 3 – Creating a Multi-Page Document
Explain
Default document formats on program diskette
(1) _____ Margins (18 & 90)
(1) _____ Tabs (every 5)
(1) _____ Line spacing (1)
Pagination
(1) _____ First line (7)
(1) _____ Last typing line (60)0000

Topic 4 – Checking Spelling
Explain and demonstrate
How does spelling verification treat:
(1) _____ capitalization
(1) _____ apostrophes and syllable hyphens
(1) _____ numbers
(1) _____ incorrect word usage (to for too)
(1) _____ prefixes and suffixes

(1) _____ spelling verification before ending a document
(1) _____ spelling verification after ending a document
(1) _____ locating marked words (Find & Spell)
(1) _____ removing highlighting (Code + Cancel)

Hyphenation
(1) _____ key to adjust line (Line Adj)
(1) _____ leave word on same line
(1) _____ place word on next line
(1) _____ hyphenate a word

Topic 7 – Revising a Multi-Page Document
Explain or demonstrate
(8) _____ Moving a paragraph to another page
- (1) _____ Cursor to first symbol to be moved
- (1) _____ Move
- (1) _____ cursor to last symbol to be moved

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(1) _____ Enter
(1) _____ Go To
(1) _____ Type page number
(1) _____ Cursor to insertion point
(1) _____ Enter

Revising documents

(3) _____ Go to a different page
(1) _____ Go To
(1) _____ Type page number
(1) _____ Enter

(2) _____ Go to the next page
(1) _____ Go To
(1)Enter

_____ Checkpoint 4 (39 points). Topics 8, 9, 10, and 14.

Topic 8 -- Repetitive Letters
Explain

(4) _____ Typing a shell letter
(1) _____ Create document
(1) _____ Type document
(1) _____ Insert stop codes at each point for insertions
(1) _____ End

(7) _____ Using a shell letter
(1) _____ Create document
(1) _____ Name the new document
(1) _____ In typing area, press Get key
(1) _____ Follow prompts to Get shell document
(1) _____ Press Find & Stop Code
(1) _____ Type variable
(1) _____ After last variable, press End

Topic 9 -- Repetitive Paragraphs
Explain or demonstrate

(4) _____ Typing repetitive paragraphs
(1) _____ Create document
(1) _____ In typing area, type paragraph
(1) _____ Press page end
(1) _____ Press End after last paragraph

(6) _____ Typing document using repetitive paragraphs
(1) _____ Create document
(1) _____ Press Get key
(1) _____ Type name of document with repetitive paragraphs
(1) _____ Type number of page for paragraph wanted
(1) _____ Move to end of first paragraph
(1) _____ Repeat for each paragraph and End

Topic 10 -- Typing a Table
Explain or demonstrate

(4) _____ Setting menus to type tables
(1) _____ Create document
(1) _____ Change document format
(1) _____ Change margins and tabs
(1) _____ Adjust line endings (adjust to No)

(5) _____ Types of tabs (normal, decimal, flush right, comma, and center)

(3) _____ Headings of tables
(1) _____ Type table first
(1) _____ Move cursor to beginning of table
(1) _____ use space bar or tab key to reach center (space bar)

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Topic 14 -- Changing spacing between tab settings
Explain or demonstrate

(3) _____ To add spaces between existing tab settings
- (1) _____ Choose change margins and tabs in format selection
- (1) _____ Move cursor to tab setting to be changed
- (1) _____ Space forward the number of spaces to be added

(3) _____ To delete spaces between two existing tab settings
- (1) _____ Choose change margins and tabs in format selection
- (1) _____ Move cursor to tab setting to be changed
- (1) _____ Backspace for each space you want to delete

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